

CAR OF THE YEAR UNVEILED IN THIS ISSUE—PAGE 60

RADIO CONTROL

car action

THE WORLD'S LEADING R/C CAR MAGAZINE

47380

READY-TO-RUN

NITRO TRUCK SHOOTOUT

7 Contenders
1 Winner—page 104

DuraTrax Maximum ST

REVIEWED

- OFNA OB-4 PRO
- TAMIYA TAO3R-TRF
- KYOSHO SUPERTEN FOUR II

HOMEBUILT

Wheel-Lifting Lowrider

INSIDE THE
4-stroke
Animals of
Acceleration



**We drive
Losi's Triple-X**
PLUS KINWALD'S
ROAR MOD NATS'-
WINNING SETUP

www.rccaraction.com

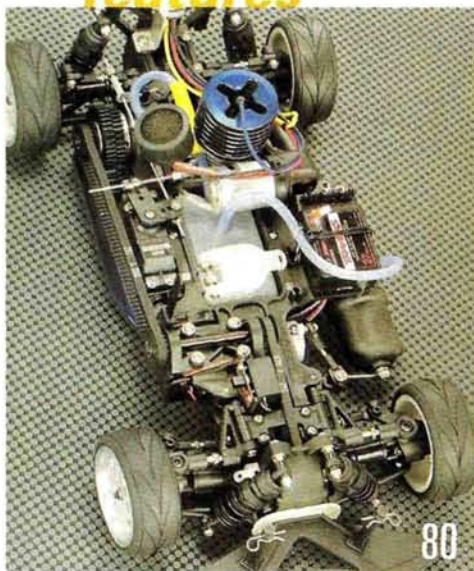
October 1999

USA \$4.95 Canada \$5.95



AirAGE

features



80

80 **Radio Control Car Action's Car of the year**

Traxxas Nitro 4 Tec
BY THE STAFF OF R/C CAR ACTION

86 **Radio Control Car Action's Total Guide to Team Losi's Triple-X**

BY STEVE POND

104 **Ready-to-Run Nitro Truck Shootout**

BY THE STAFF OF R/C CAR ACTION

126 **1st LOOK**

HPI Proceed

1/8-scale, 100-percent racing
BY PETER VIEIRA

144 **ROAR Off-Road Modified Electric Nats**

Triple wins for the Triple-X
BY GEORGE M. GONZALEZ

160 **The Reedy International Touring Car Race of Champions**

Fabulous Barry Baker takes the checkered flag
BY GEORGE M. GONZALEZ

176 **HOME-BUILT PROJECT Low Rider**

How low can you go?
BY PAUL CONRAD

186 **HOW TO Rebuild your off-road suspension**

Get smooth
BY THE STAFF OF R/C CAR ACTION



86



104

thrash tests

54 **Kyosho SuperTen Four II**

Kyosho's 4-stroke first
BY STEVE POND



70 **OFNA RACING OB-4 Pro**

Middle man
BY PETER VIEIRA



62 **Tamiya TAO3R-TRF**

Factory ride
BY DOUG MERTES



departments

10 Starting Line

18 Readers Write

32 Readers' Rides

135 Racer News
• NEWS FLASHES!

• RACER TIP OF THE MONTH
—provided by Josh Cyrul,
Team Trinity

• INNOVATOR AT WORK
—Team Yokomo's Masami
Hirosaka

• SPEED SHOP
—TS Racing high-performance
lubricants for R/C cars
—Penguin R/C Pro Strap System
—Bulletproof Team Kinwald parts
for the NXT and GTX

• RACER PROFILE
—Jon Orr

200 R/C Car Action Info Source

206 Classified Ads

209 Manufacturer and advertiser
contact information

columns

23 Inside Scoop
CHRIS CHIANELLI

36 Pit Tips
BY JIM NEWMAN

42 Troubleshooting
BY DOUG MERTES

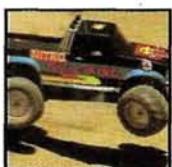
48 Piston Power
BY CHRIS CHIANELLI

210 Chris's Back Lot
BY CHRIS CHIANELLI

ON THE COVER: DuraTrax Maximum
ST; O.S. Engines FS26S-C 4-stroke;
Team Losi Triple-X (all photos by
Walter Sidas).

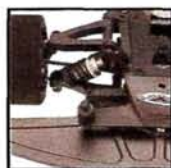
Instant Excitement!

Does 3 minutes for microwave popcorn just seem too long? Does the time delay between hitting "cash withdrawal" and the delivery of your \$20 seem like an eternity? Then you're probably one of the many R/C



hobbyists (and would-be hobbyists) who can hardly wait to finish building before they hit the track with a new nitro machine. You're in luck: the "RTR" (ready-to-run) cars and trucks on the market today are the R/C equivalent of Cup o' Noodles: just add hot water (or a bit of paint and some decals), and you're ready for action. This month, we test 7 of the hottest RTR machines in our **"Ready-To-Run Nitro Truck Shootout."** The results may surprise you!

In other nitro news, HPI recently surprised R/C enthusiasts by releasing an all-new chassis that isn't any type of touring car, truck, or mini; heck, it isn't even 1/10 scale! The brand-new Proceed is HPI's first entry into the world of 1/8-scale, on-road nitro racing—unequivocally the highest-performance segment of R/C car competition. See for yourself in **First Look: HPI Proceed.**



As a final nod to nitro, you'll definitely want to read our



Kyosho SuperTen Four II review. It's much more than a "Thrash Test"; of course, Kyosho's O.S. 4-stroke-powered car gets the up-close-and-personal treatment, but there's also tons of info on 2-strokes versus 4-strokes, performance data and other how-

they-work revelations that you won't find anywhere else.

Last, but certainly not least, we revisit the Team Losi Triple-X we "First-Looked" last issue. This month's mega coverage includes not only our own hands-on first drive with the new car, but also a breakdown of Brian Kinwald's personal ROAR Mod Nats-winning machine, complete with all the setup info you need to know! This is the Total Guide to the **Team Losi Triple-X**, and it's not to be missed.



Next month—more cool stuff!

Peter Vieira

Peter Vieira
Editor

EDITORIAL

Group Editor-in-Chief TOM ATWOOD
Senior Editors CHRIS CHIANELLI, STEVE POND
Senior West Coast Editor GEORGE M. GONZALEZ
Editor PETER VIEIRA
Assistant Editor GREG VOGEL
Editorial Coordinator DANA DONIA
Editorial Assistant MELISSA L. TOOTHILL

COPY

Copy Director LYNNE SEWELL
Senior Copyeditor MOLLY Z. O'BYRNE
Copyeditor COREY WEBER

ART/DESIGN

Corporate Art Director BETTY K. NERO
Art Director ALAN J. PALERMO
Promotional Art Director LESLIE COSTA
Assistant Art Directors
ALESSANDRA CIRILLO, JOANNA WINN
Staff Photographer WALTER SIDAS

ADVERTISING

Associate Publisher and Director of Advertising
SHARON WARNER
Assistant to Associate Publisher SIRI A. WHEELER
Advertising Manager JILL ELLEN AMALFITANO
Senior Account Executive MONA TASSONE
Advertising Account Executives
JEANINE E. GERBACK, KATHRYN GEARHART,
FRANK E. SCALCIONE
Advertising Coordinator ANN T. WIEBER

CIRCULATION

Circulation Director NED BIXLER
Circulation Assistant P.J. UVA

OPERATIONS

Director of Operations DAVID BOWERS
Production Associates THOMAS J. HURLEY,
CHRISTOPHER HOFFMASTER

PUBLISHING

Group Publisher LOUIS V. DeFRANCESCO JR.
Publisher YVONNE M. DeFRANCESCO
Associate Publisher SHARON WARNER

CORPORATE

Chairman DR. LOUIS V. DeFRANCESCO
President and CEO MICHAEL F. DOYLE
Vice President G.E. DeFRANCESCO
Secretary L.V. DeFRANCESCO
Treasurer YVONNE M. DeFRANCESCO



Member Audit Bureau
of Circulations

PRINTED IN THE USA



100 East Ridge, Ridgefield, CT 06877-4606, USA

Getting on Track

Here's my story. My hometown is about 2½ hours away from the nearest track in Las Cruces, NM; kind of a long haul. So, I want to build a ROAR-legal size track and was wondering if you could help me out. I recently visited M-n-M Hobbies in California and saw their track; I liked its size and layout. However, I've also seen a smaller track: about 25x20 feet. What measurements should I go by?
SEAN WENTWORTH
Roswell, NM

Sean, there aren't any specific requirements for the length and width of a track. There is, however, a minimum lane width of 8 feet; this provides ample space for multiple cars to go through at once. If you actually plan to host races, the best way to proceed is to take the total area you have and subtract space for a reasonable pit area, a 10-person drivers' stand and lap-counting/officiating space; what's left is your track. Owners of existing tracks are a resource you can use; next time you make the trip to M-n-M or another track, ask the owner to give you some layout and construction tips.
—Greg

My Rims Dyed

I read your article on "How to dye plastic parts" in your July '99 issue, and I just tried dyeing several sets of rims for my touring car. The HPI rims took the dye well, but the Yokomo rims warped from the heat! I think they might be more plastic than nylon. Just thought I'd pass on the info. [email]
CASTELL

Thanks for the heads up! Many plastics dye well and retain their shape, but some do just the opposite. As the article suggests, you should test questionable parts by first dyeing a section of the "tree" the part came from or an expendable duplicate part (save those worn or broken parts as test subjects). Sorry you had some bad luck; while we're talking Yokomo, let me add that the plastic bulkhead caps on older Yokes will also shrink if dyed.
—Greg

Decision Maker

I'm thinking about buying a nitro car, but I don't know which one. I'm looking for speed, durability and parts availability. I narrowed my search down to the HPI RS4 Nitro and the Kyosho GP Spider MKII. Most people tell me to get the Kyosho, but I can't decide; please help me. [email]
JESSE HOPKIN

Both kits include reliable pull-start engines, aluminum chassis, plastic-body oil shocks and good-looking bodies. Both are also plenty of fun to drive, so to determine which kit to get, you should look beyond what's in the box. Does your local hobby shop support both kits equally well with parts, or do they stock more of one brand than another? Go with the car for which you can most easily obtain parts. If both are equally well supported (or for that matter, equally unsupported), consider buying whichever kit most of your friends are running. That way, you can share parts and tuning tips. Also, your car will be capable of the same performance as your friends', and that always makes racing together more fun.
—Pete

We know, we know

Hey, Pete, I'm not trying to nit-pick, but in "Readers Write" in the August issue, you told someone that a supercharger will not work for an R/C car, and you gave him an example. The example you gave him, however, was of a turbocharger, not a supercharger. You are 100 percent right that a turbo will not work on a model engine, but a supercharger, on the other hand, will. A supercharger has nothing to do with the exhaust; its impeller is driven by the crankshaft. If tolerances were tight enough, it would be possible to turn an impeller fast enough. About that person running compressed air into a chain-saw engine: that does work, trust my throbbing throttle finger. Don't try it with a model engine (I'm sure

you had enough sense not to) because it could blow the tiny thing to pieces! [email]
TYLER BILLINGSLEY

You weren't the only one to inform me of my blunder, Tyler. In my excitement over the turbo project, I lost sight of the original question. Of course, no one will believe me now, but I do know the difference between a turbocharger and a supercharger. A supercharger is the thing Mad Max activates to chase down the bad guys with his V8 Interceptor; a turbocharger is the part that implodes as you drive to work in your early-'80s Datsun 280ZX and leaves you stranded by the side of the road. See? I'm the expert on this stuff.
—Pete

Easy Speed

I saw in your magazine that the Traxxas Nitro 4 Tec goes 50mph. My dad gave me a Traxxas Street Sport electric car for my birthday. Can it go 50mph? [email]
JAMES POST

Sure! Just throw it in the trunk of your dad's car and have him drive onto the highway. Heck, it'll do 100 back there! Seriously, James, you could probably spool a Street Sport up to about 35mph with a low-turn, machine-wound modified motor such as a Trinity Zircon or Team Orion Pilot. Ask your local dealer for help, and while you're there, pick up a pinion gear that's a couple of teeth smaller than the stock piece. This will allow you to take full advantage of the hotter motor.
—Pete

More Weird Stuff, Please

I picked up your mag (August '99 issue) at Barnes & Noble. I have to say, it is one of the best R/C mags I've ever read. Looking through your classified ads, I noticed a unique vehicle: Kyosho's Nitro Blizzard. I surfed over to

WRITE TO US! We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," Air Age Inc., Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

EMAIL ADDRESSES:

Chris Chianelli: chrisc@airage.com
George Gonzalez: georgeg@airage.com
Steve Pond: stevep@airage.com
Peter Vieira: peter@airage.com
Greg Vogel: gregv@airage.com

Kyosho's website and found the Nitro Blizzard among its products. There was a list of all the Kyosho products that have been reviewed by R/C mags, and the Blizzard wasn't on it. Would you consider reviewing the occasional R/C oddity, such as the Nitro Blizzard? [email]
KEVIN

Actually, we did review the Nitro Blizzard, back in the November 1998 issue. We have also reviewed Kyosho's nitro-powered ATV Quad Rider and Tamiya's military vehicles. We will soon review the electric-powered Blizzard and Quad Rider (or "ATV Guy," as we like to call him). Keep reading, and we'll keep covering the full spectrum of wheeled R/C.
—Pete

Flame on

I read the "Military Muscle" article, and now I have to get a King Tiger tank. Is there any way to make the gun shoot fire?
DARYL HENDRICKS
Swansea, MA

Gee, although a fire option sounds completely reasonable and safe, no one offers a conversion kit for flame-throwin' action. You'll just have to be content with melting Army men with a magnifying glass. Hey; maybe you could mount a magnifying glass on the tank!
—Pete





BY CHRIS CHIANELLI

All-New Nitro-Powered "CLOD-STOMPER"

from Traxxas

THIS IS (QUITE LITERALLY!) HUGE NEWS! Traxxas has a long history in R/C trucks but has never tackled the full-on 4WD monster-truck arena—until now. The new, and as yet unnamed, truck borrows nothing from the established mega-monsters of R/C trucking, those being Tamiya's Juggernaut and Clod Buster and Kyosho's USA-1. The new Traxxas machine isn't even electric powered; hello nitro! The gas powerplant (a TRX .15) sends power



to the 4WD system via a 2-speed tranny—with reverse! A separate servo operated by a third channel shifts the truck. Get this: the 2-speed works in forward and reverse, and the truck can reportedly top 30mph! That's fast, particularly for a big truck.

Other atypical features include fully independent, double A-arm suspension damped by eight, oil-filled shocks, a completely sealed



drive train, a Lexan body, and tons more.

We can't wait to test the real thing; the truck shown here is a preproduction tester, as evidenced by the one-color paint and white parts.

Even in rough prototype form, it looks awesome!

Traxxas Corp., 12150 Shiloh Rd., #120, Dallas, TX 75228; (972) 613-3300; fax (972) 613-3599; website: www.traxxas.com.

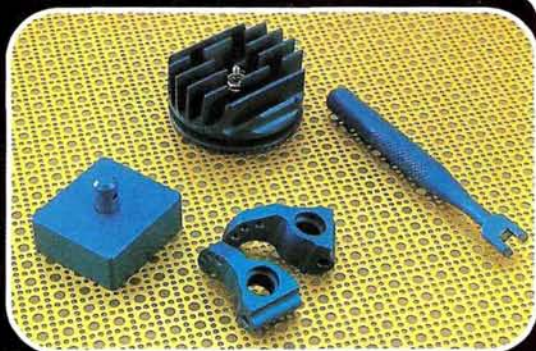
Add this stuff to your Kinwald file: first up, the TK3077 "fake" transponder. Don't wait until the first qualifier to see how the transponder's heft will affect your car's handling! Drop in this blue-anodized dummy unit and practice with the same setup as you race with. Makes sense—right?

Next, dress up (and beef up) your Team Losi Double-X series buggy with Kinwald machined rear hub carriers. They're available in pairs with 1 degree or 1½ degrees of toe-in (part nos. TK3500 and TK3501, respectively), and they're clearly labeled "left" and "right" for no-brain installation.

The Team Kinwald tie-rod wrench (TK3086) will speed your car off the bench; the big feature here is its extra length, which gives you more torque and is simply easier to handle than shorty wrenches. It also fits a lot better than stamped tools, and hey, it's blue.

And finally, we have this interesting vertical-fin "Power Punk" engine heat sink. Horizontal fins are *de rigueur* for R/C engines, but that doesn't mean they're the best. After all, the best air-cooled 2 stroke engines in the world used vertical fins. Do you remember any early '80s motocross bikes (the days before water cooling came on strong) that had heat-sink heads with the horizontal Saturn-ring fins we see on model engines? I thought not.

Trinity Products Inc., 36 Meridian Rd., Edison, NJ 08820; (732) 635-1600; fax (732) 635-1640; website: www.teamtrinity.com.



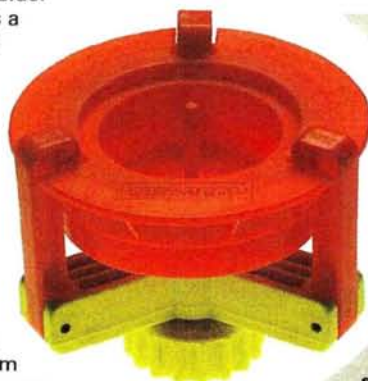
MORE TRINITY BLUES

Hobby-Tech's sticky situation

Anybody out there trying to design the ultimate tire-gluing tool? You can step away from the drawing board: Hobby-Tech has beaten you to the punch. The new Hands Free Tire Gluer features a clamping bead puller that opens a nice, even gap between the tire and rim of any touring-car tire/wheel combo to make for easy, no-mess gluing. An adapter ring is included for gluing up mini tires and wheels—cool. The tool really works, and with those Day-Glo colors, you'll never misplace it!

Speaking of gluing wheels and tires, Hobby-Tech has added some new mini treads and hoops to its scale-looking lineup. The Bondurant and AR-767 wheels will fit any mini with a 12mm hex hub (that's every mini, I think), and they're the perfect touch for a custom street look or NASCAR flavor. No offense to our brilliant staff photog Walter, but you really gotta see these wheels up close and personal to see the fine detail and superb finish. The Goodyear slicks are the perfect finishing touch to the new wheels and are also available in standard sedan size.

Hobby-Tech, 1139 Coiner Ct., City of Industry, CA 91748; (888) 722-7101; fax (888) 843-0707; website: www.hobby-tech.com.



NEW & IMPROVED REV-TECH Comm Drops 2

According to Trinity, Comm Drops 2 blows away the original formula.

These drops increase rpm in both stock and modified motors. Just a drop or two before each run will increase power,

Blended specifically to work with the latest generation of higher-silver-content motor bushes.

Trinity Products Inc., 36 Meridian Rd., Edison, NJ 08820;

(732) 635-1600; fax (732) 635-1640; website:

www.teamtrinity.com.



SPEED GEMS 2™

NEW FOR 1999!

**Adjustable Timing
Dual Ball Bearings**

DB-5

**Armature Blank
For More Torque
More Power
Higher Efficiency**

**Perfect For Use
With New 1400 SCR
Plus Panasonic Cells**

TRINITY®



Zircon™

9 Turn Double
9220, \$49.99



Garnet™

13 Turn Double
9224, \$49.99

DuraTrax Maximum BX

As you may or may not already know, DuraTrax's Maximum ST truck won our ready-to-run shootout in this issue. The truck represents a fantastic combination of value and performance right out of the box. It really is a great truck, and I'm glad to see DuraTrax has expanded the concept to include this new buggy.

Like the ST, the BX buggy takes the term "ready to run" to the limit. The body is painted and the Hitec radio is installed. Even the "AA" batteries are included! In short, you can experience the exciting world of nitro almost immediately after removing the buggy from the box. The same Torq .12 glow engine as performed so well in the truck is installed in the BX. Some of the features in this engine are: heat-sink head; heavy-duty ball bearings; and—I really like this one—twin-needle valve carburetor.

Other features of the BX are: aluminum "Rigi-Frame"; ball-bearing tranny; "Fiberite" disk brake; "Control-Tech" slipper clutch; adjustable turnbuckles; oil-filled, coil-over shocks; and free, step-by-step video on operation and tuning of the Torq .12 engine.

The DuraTrax guys did it right. I wonder if a Maximum Sedan is in the works? I hope so.

Great Planes Model Distributors, 2904 Research Rd., P.O. Box 9021, Champaign, IL 61826-9021; (800) 682-8948; fax (217) 398-0008.



More MRC vehicles go RTR



The little MRC SP3 Extreme on-roader and giant-size, all-terrain Thunder King couldn't be further apart in terms of size and mission, but they're equally easy to get running now that MRC is offering them as ready-to-run machines, right down to installed radios and painted bodies. The kits (can ya really call 'em "kits"? even include chargers and batteries. The Extreme gets a standard 7.2V pack while the Thunder King gets MRC's heavy-duty "juice box"—an 8-cell Ni-Cd pack that delivers the high-voltage wallop you need to motivate the big, dual-motor rig.

Model Rectifier Corp. (MRC), 80 Newfield Ave., Edison, NJ 08818-6312; (732) 225-6360; fax (732) 225-0091; website: www.modelrec.com.

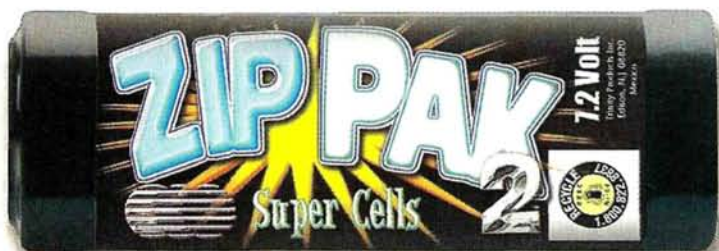
this time the sequel is even better



more powerful than ever before this high performance racing pack now features Sanyo KR-1500sc cells, the only true 1500 cell in RC racing packs. RC5920, \$22.99

The legend returns! the most popular sport battery pack ever produced for RC racing is back and it's now packing 1400 mAHs of raw power, and a new lower price!

RC5922, \$18.99



now playing at all good rc hobby shops

TRINITY
www.teamtrinity.com

***** 5 Stars

"Better than the original, more action and a lower cost!"

OB-4 HOP-UPS ALREADY!

Peter Vieira only just reviewed the OB-4 in this issue, yet OFNA Racing already offers optional parts for the mid-motor hot-rod.

The clear Lexan shocks (part no. 39040) have great eye appeal and feel smooth, as tested by a hand squeeze. Purple-anodized motor mounts (39305) are offered to beef up the drive train and improve motor cooling, and they add a distinctive Byzantine look (I knew that art history class would pay off ...). The 39309 finned heat sink (on top of the arched motor mount) increases cooling even further, and the ringed motor-mount posts (39306) replace the kit's stock standoffs for the total purple package.

OFNA Racing, 22692 Granite Way, Ste. B, Laguna Hills, CA 92653; (949) 586-2910; fax (949) 586-8812.



ELECTRO-QUAD

As many of you know, Quad Man and I are on first-name terms. I have him over for dinner all the time. Well, he let me take a peek at the new electric version of his machine. He rides this one after midnight so as not to disturb the neighbors. Those close to Quad man know he is a very considerate human being, to say the least.

Just like Quad man's nitro machine, the Quad Rider EV is 80 percent built and features: a Mabuchi 540 motor; three, long-stroke, oil-filled shocks; front double-wishbone and rear swing-arm suspension; ball diff; and fiber-resin chassis with cubic-frame structure for light weight and rigidity.

So, if you happen to smell that distinctive odor given off by arcing commutators at 3:30 in the morning, just roll over and go back to sleep. It's just Quad Man and me taking a jump over your mom's tiger lily patch.



Wedico Americana

Wedico, the German maker of those awesome 1/16-scale trucks, is introducing the first in a series of new American semi-trailers with this 31-inch log hauler. Modeled after the type used by the pulp mills in the Southeast, this trailer has four cradles capable of carrying full-length logs or two bundles of shorter logs. The trailer kit is of all-aluminum construction with leaf-spring suspension. It is fully compatible with Wedico lighting systems and features a black, powder-coat finish.

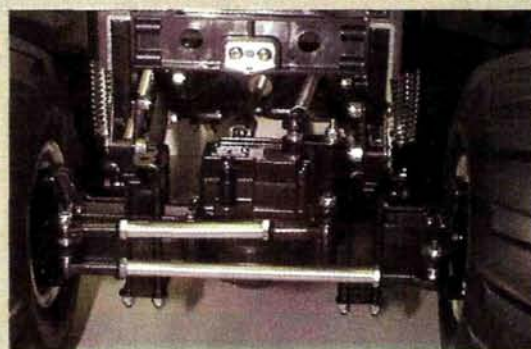
Precision Model Distributors Inc., 205 Barnhill Rd., Ladson, SC 29456; (843) 875-5454; fax (843) 875-5465.



New Era Models has applied its expertise in custom metalwork to bring you these heavy-duty upgrades for Tamiya's Juggernaut. They are: a four-link suspension kit that includes eight rods and heavy-duty rod ends with hardware; heavy-duty steering kit, including rods and play-eliminating special nylon ball links; and heavy-duty anodized shocks with optional anodized reservoir kit.

New Era Models, P.O. Box 7378, Nashua, NH 03060; (603) 888-4453.

New Era Jug Mods



DURATRAX

THE LEADER IN AWESOME R/C READERS' RIDES

Win a \$500 gift certificate from DuraTrax!

Send a sharp, uncluttered, well-exposed color photo of your car or truck (no Polaroids please!), along with a brief description, to Readers' Rides, R/C Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. If we choose to feature your creation, you'll receive a free Radio Control Car Action decal sheet. You'll also be eligible to win a \$500 gift certificate from DuraTrax in the ninth annual "Readers' Rides of the Year Contest" in the fall of 1999. In case we need to contact you, write your address and phone number on your letter and on the back of every photo you send. Good luck!

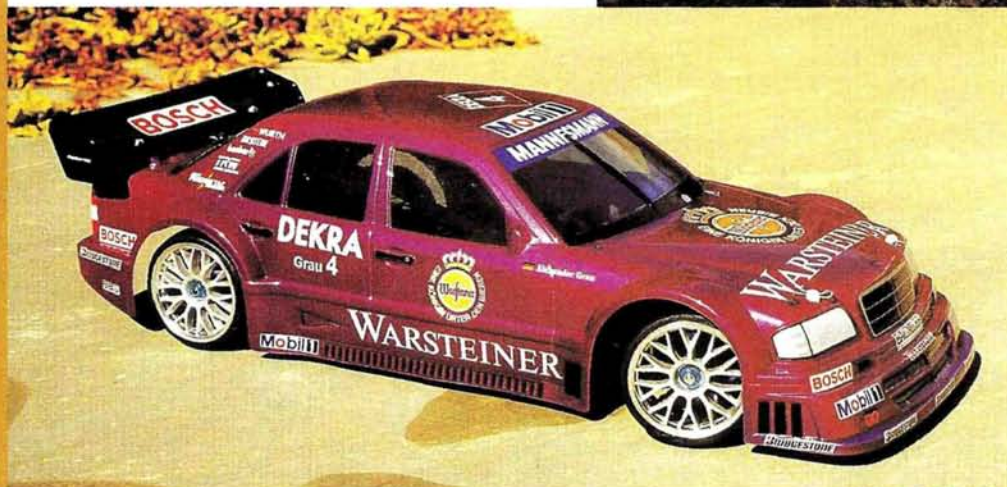
Earth Movin'

Scott Coslett of Berwick, PA, bought this Kyosho Hanomag 660 Turbo front-end loader a few years ago at a swap meet; it was missing only a door handle. He disassembled and cleaned it then reassembled and painted it with Caterpillar yellow enamel. Scott says the only change he made from the original equipment is a Novak 610 ESC, which he has found to be much gentler on the plastic differentials than the original mechanical speed control. The loader uses a 4-channel radio and is completely operational. With its original mirror-mounted driving lights and blinking emergency light, this machine can probably "bury" the competition.



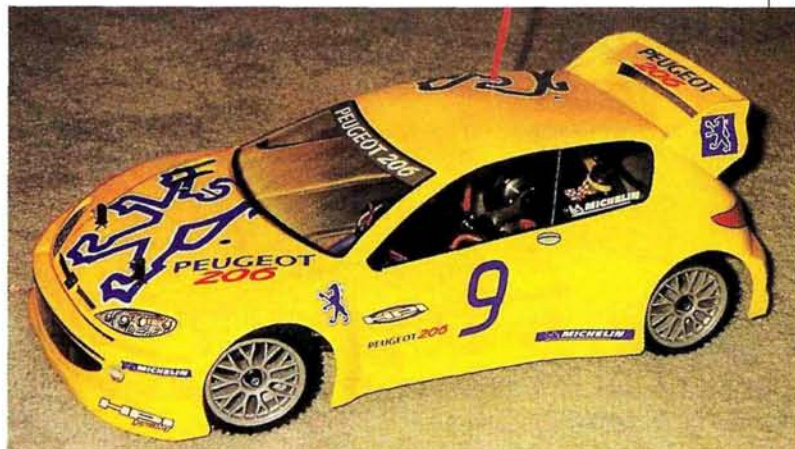
Sharp!

Doug Bennett of Salida, CA, painted his Yokomo YR-4 M2 USA a metallic burgundy with blue undercoat. It's powered by a Midnight II Stock motor and features a GM V-12 ESC, Airtronics 94737 servo, titanium hinge pins and turnbuckles and several GPM blue-aluminum suspension parts. A KO Propo EX-1 radio controls the car's smooth moves.



Bright Ride

This stylish HPI Pro 4WD was built by Robert Alip of Sumter, SC. It features a Novak Duster II ESC, Tekin 75 FM mini-receiver, full bearings, Hammad Ghuman aluminum front and rear shock towers, front and rear Trinity Congo Springs, Robinson Racing spur and pinion and a Trinity AmpMax II battery. It's powered by a Fantom Competition motor and topped off with a Peugeot body.



Sprint Spirit

These sprint cars were built by Doug Hinkel of Milwaukee, WI. Both feature Futaba servos and a Novak receiver. They have adjustable wings made of 1/16-inch, plywood-covered foam-core with Lexan side boards. Doug made both vacuum-formed bodies. The 1/10-scale, with red wing side boards, is based on an Associated Nitro DS. It features an O.S. CV12, Associated pipe, MIP clutch, and a cage and Nerf bars made of 1/8-inch, stainless-steel rods. The 1/8-scale has Rod Moody sprint-car components along with Paris pipe, Delta clutch, 3/16-inch chrome moly-tubing cage and 3/32-inch Nerf bars.

sponsored by **DURATRAX**

DURATRAX

THE LEADER IN AWESOME R/C READERS' RIDES

Inspired to Win

John DeHan of Maumee, OH, says he purchased this HPI Nitro RS4 after he read about it in *Radio Control Car Action*. Last February's issue helped him find the right products to finish hopping it up with all-aluminum parts—a quest that, in John's words, had moved “from innocent fun to obsession!” Among its many features are an O.S. .12 engine, CVEC tunable pipe, Du-Bro fuel filter, Team Associated air filter, Tamiya anodized-aluminum locknuts, RPM heavy-duty ball cups and Lunsford titanium turnbuckles and hinge pins. Alien supplied the aluminum upper deck, gear-shaft brace, rear Y-brace and exhaust wire mount, as well as a 3.15mm chassis plate. Among the HPI parts are front and rear ball differentials, hard foam inserts, mesh 3mm offset wheels, aluminum shocks and 2-speed transmission. GPM supplied these alloy front and rear parts: arm sets, gearbox, knuckle set, front bearing C hubs and lower arm mount. Other features include Hammad Ghuman's ultra-lightweight front shaft and front and rear shock towers, and MIP front and rear 200mm CVDs, Boost Bottle, heat sink, Butt sink and 2-shoe clutch. This beauty took first place at the 45th annual Weak Signals Toledo Expo.



Oval Action

Dean Brauer of Wichita, KS, built this Associated RC 10L3. It's powered by a Trinity Paradox rebuildable stock motor and Sanyo 2000 batteries. Other features include a Novak Racer EX ESC, Trinity spur, Robinson Racing Products pinion and BSR tires. Dean says the Air Wave wing keeps the car's rear end planted in the corners. A Futaba Magnum Jr. radio controls this beauty. Nice job, Dean.

Italian Stallions

Brandon Blake of Aviano, Italy, sent us this picture of his car collection. His Traxxas Nitro Rustler is powered by a TRX Pro .15 topped off with an HPI Ford F150 body. It also features a Boost Bottle and temperature gauge from MIP, Motor Saver Air Filter and CVEC tuned pipe. Other accessories include titanium turnbuckles, MIP Shiny CVDs and Pro-Line tires with HPI Super Star Truck Wheels (not shown). The Traxxas Nitro 4 Tec also has a TRX Pro .15 under its hood. Other goodies are an OFNA slide carb with optional linkage kit, Motor Saver Air Filter, Paris Turbo-Ring Pipe, alloy shocks with Traxxas springs, Pro-Line Warlock wheels with TRC foams and a Protoform Alfa Romeo 156 shell. Last is Brandon's Tamiya Fiat Abarth Berlina Corsa with M-02 chassis; he says it's “silly fast.” It's powered by a Trinity Speed Gems 2 11 triple Topaz, along with Trinity Voltmax 1700 stick-pack batteries. This beast also has a Novak Duster II Sport ESC. All three cars are controlled with an Airtronics Caliber 3PS radio. Brandon notes, “These cars are not for the faint of heart!”

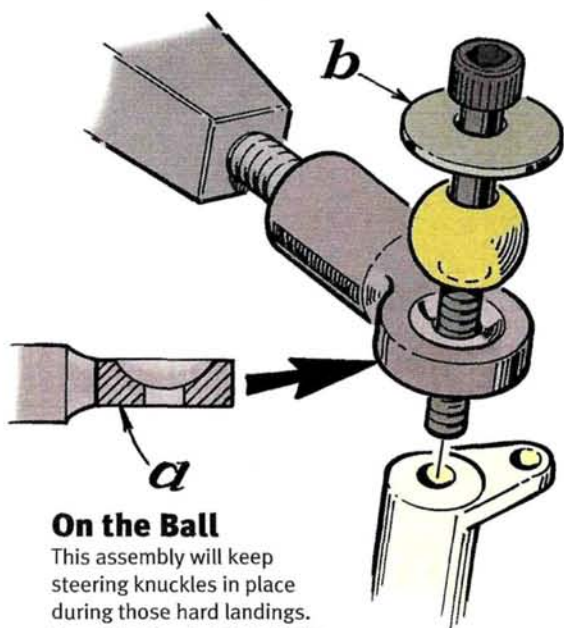


Nearly Twins

Carlos Calleja Morencia of Valladolid, Spain, tells us that his two vehicles (a Losi XX 'CR' Kinwald edition and an Associated RC10B3) have identical equipment: LRP 1PC V6 ESC, Orion V-Max batteries, Reedy Sonic motors, KO Propo 2015 FET servos, titanium tie-rod sets and Trinity aluminum screw sets. Both are controlled by a KO Propo Mars radio, and Carlos painted the bodies himself. He hopes to run them in the Spanish R/C championship and at the Worlds in Finland.

BY JIM NEWMAN

Radio Control Car Action will give a 6-month subscription (or an extension of your existing subscription) for each of your ideas used in "Pit Tips." Send a rough sketch to Jim Newman, c/o Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. We're unable to publish many good tips because we don't have the sender's name and address. Please note: because of the number of ideas we receive, we can neither acknowledge every one, nor can we return unused material.



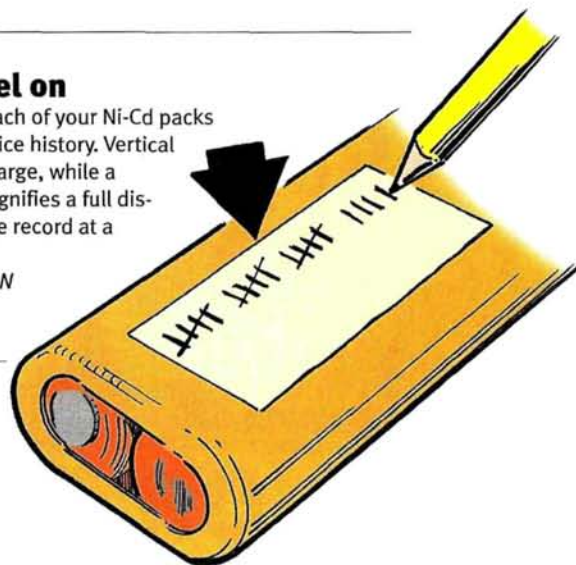
On the Ball

This assembly will keep steering knuckles in place during those hard landings. Invert the stock rod end (a) so that the cup is upward, then place a large washer (b) on top of the Du-Bro brass ball and Allen screw. The washer prevents the ball from pulling through the cup.
MASK SAVITSKE
Quakertown, PA

Slap a Label on

Tape a label to each of your Ni-Cd packs to record its service history. Vertical marks show a charge, while a diagonal slash signifies a full discharge; the whole record at a glance.

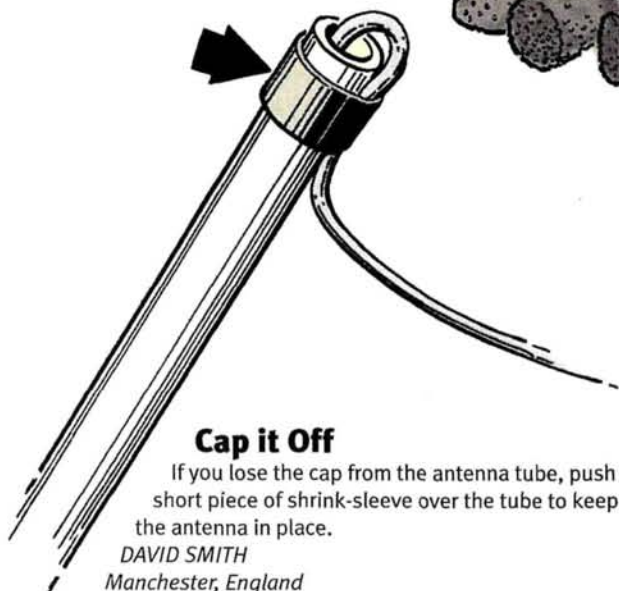
GORDON HENSON
Lowell, OR



Stocking Stuffer

If a washing machine can get grease and oil out of your jeans, why not use it to clean your air filters? Just place the dirty filters into a nylon stocking or net bag and toss it into the wash.

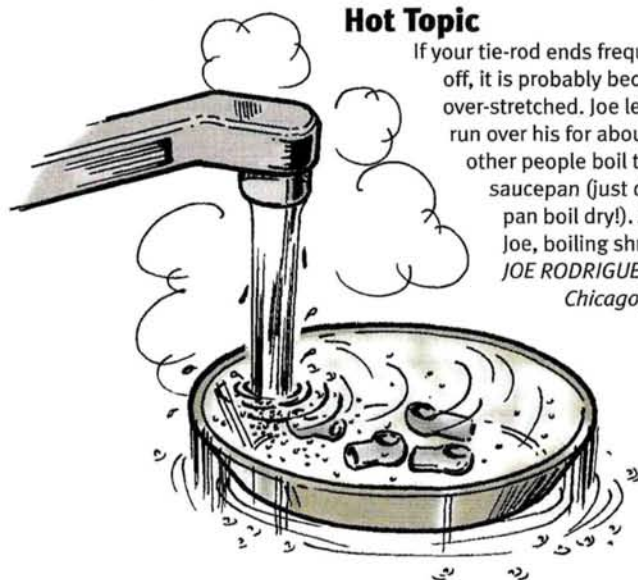
TONY MORGAN
Huntsville, AL



Cap it Off

If you lose the cap from the antenna tube, push a short piece of shrink-sleeve over the tube to keep the antenna in place.

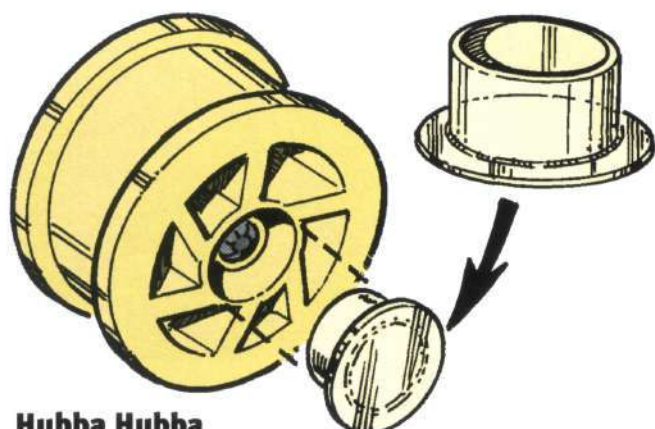
DAVID SMITH
Manchester, England



Hot Topic

If your tie-rod ends frequently pop off, it is probably because they are over-stretched. Joe lets hot water run over his for about 10 minutes; other people boil them in an old saucepan (just don't let the pan boil dry!). According to Joe, boiling shrinks them.

JOE RODRIGUEZ
Chicago, IL



Hubba Hubba

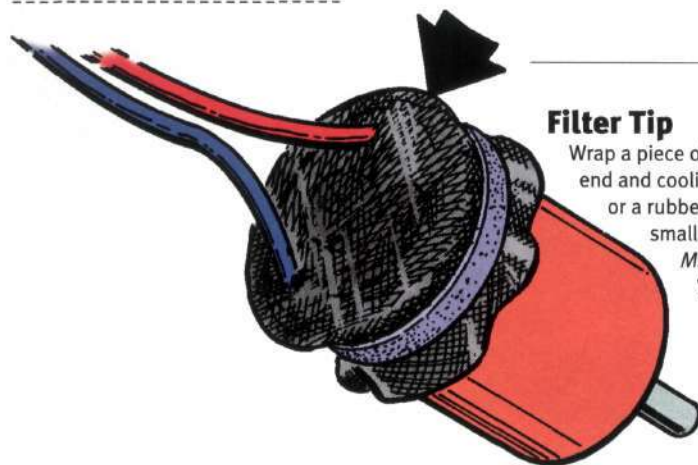
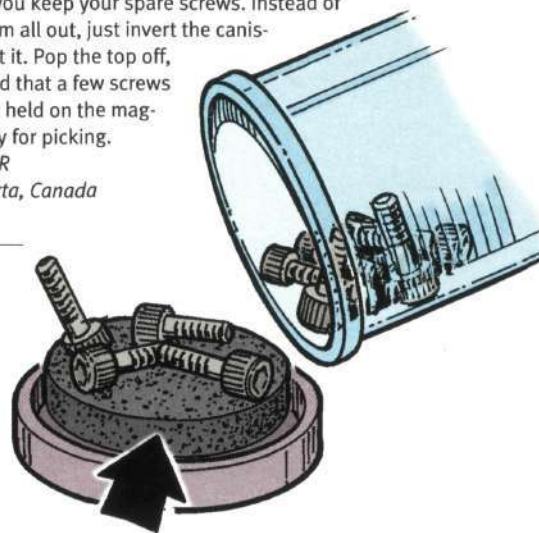
Hub caps will keep dirt out of the outer bearings. This hub cap is cut from the plastic thread protector tube of an NGK spark plug and is glued to a Lexan disc. The cap is then sized for a perfect press fit in the wheel.

DAVE COWGER
Seattle, WA

Quick Picker

Glue a flat magnet into the cap of the 35mm film canister in which you keep your spare screws. Instead of dumping them all out, just invert the canister, then right it. Pop the top off, and you'll find that a few screws will be safely held on the magnet and ready for picking.

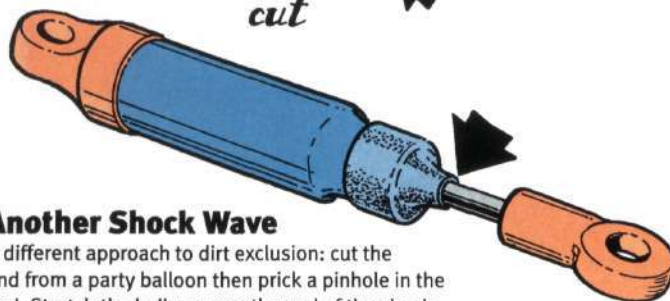
CLINT HALLER
Airdrie, Alberta, Canada



Filter Tip

Wrap a piece of air conditioner filter element around the open end and cooling slots of your motor and secure it with a zip-tie or a rubber band. This is very effective in keeping grit and small stones out of the endbell.

M. LOIZOU
Yonkers, NY



Another Shock Wave

A different approach to dirt exclusion: cut the end from a party balloon then prick a pinhole in the end. Stretch the balloon over the end of the shock body and leave a short sleeve around the shaft. The film of oil on the shaft allows it to slide through the balloon, which acts as a wiper, and removes dirt from the shaft as the shock operates.

MIKE ROMMEL
Prince George, BC, Canada

Oil Embargo

A hardware store O-ring or rubber washer can be snapped into the lid of most shock-oil bottles to prevent leakage when the bottle is stored on its side in your pit box.

LUKE FAILLA
Merlin, OH





ROBINSON RACING PRODUCTS

TROUBLESHOOTING

BY DOUG MERTES • ILLUSTRATIONS BY JIM NEWMAN

All Greased Up

I was given my first R/C car—a Tamiya TA03F—for my birthday, and this hobby is everything I hoped it would be!

My problem is that every time I put grease in the gearboxes, it drips out through the bottom! It's especially bad on hot days when I run a few battery packs through the car without letting the motor cool off. Is the motor getting so hot that it's turning the grease to liquid, or am I missing something about sealing the gearboxes?

NICK PRESLEY, Lombard, IL

Nick, it sounds as though you've made R/C mistake no. 17: you think that too much grease must be just the right amount. The grease is dripping out of your gearbox case because there's just too much of it in there! Believe it or not, your TA03 requires just a little grease on the toothed faces of the differential cases and idler gears. Tamiya gives you plenty of grease in the kit to lubricate everything well, and unless you have to pull the gearboxes apart to repair a gear or a diff, you should be able to grease everything once and forget about it. Don't worry about sealing the gearboxes unless you run on a particularly sandy or gritty surface.

Remove the gearboxes and wipe inside the cases. This should leave plenty of lube on the gears and eliminate the dripping mess. Incidentally, I've had good luck using Aero-Car's* gear and diff lubricant in Tamiya gearboxes. It's thick, pink and gooeey and looks as if it couldn't possibly be a lubricant, but it's a fine one. Put just a thin coat on every other tooth, however, and you'll have a gear train that runs smoothly.



Extreme Results From RRP.

Richard Saxton Chooses Precision Components From Robinson!



Absolute Series Pinions: Available in 48P in 16T thru 28T sizes. Super hard, lightened and cut unmatched precision. Great with any spur, but with an Absolute spur, even on-off noise is gone! RRP 1416 - RRP 1428.



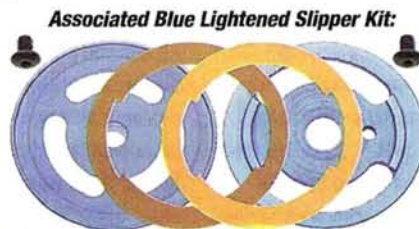
Absolute Series Spurs: Available in 48P in 80T thru 91T, this is the quietest spur you can buy! RRP 1780 - RRP 1791.



RC10 GT Clutch Bells: Precision machined one-at-a-time from a single piece of steel and then hardened. Fits ALL Associated and MIP shoes. (New 14T) RRP 2214 - RRP 2224.



RC10 GT Gas Spurs: Super tough and precision machined from heat resistant plastic mesh flawlessly with our Clutch Bells. 32P in 61T thru 67T. RRP 2261 - RRP 2267.



Associated Blue Lightened Slipper Kit:

The rear plate is hard anodized to reduce wear and the front plate is color treated. The front plate is designed to hold the slipper pad forcing the pad to slip on the rear plate. When pad shows sign of wear just flip it over for a new surface. Metal parts are CNC machined for a flawless fit. RRP 1515.



Titanium Stealth Top Shaft: CNC Machined from a single piece of titanium, this super hard, super light shaft will fit any Stealth transmission. No serious r. should do without this part. RRP 1512.

1998 World Cup and National Champion Richard Saxton:
"I only care about performance, and that's why I run Robinson Racing gears and slipper clutches exclusively."

— Richard Saxton

"Turn to Robinson Racing when compromise is out of the question."

ROBINSON RACING PRODUCTS • 4968 Meadow View Drive • Mariposa, CA 953
Voice 209.966.2465 • Fax 209.966.5937 • www.robinsonracing.com



Really Tired!

My Kyosho GP10 gas sedan really rips! The Pro-Line tires I use seem to handle best when I pair them with soft molded inserts or firm sponge liners.

Unfortunately, the liners sometimes get all bunched up inside the tires, especially when I've run the car really hard. Once, a liner split (I had glued the ends together) and rolled up into one half of the tire, so my car bounced up and down as it went down the straight. Needless to say, that caused some strange handling problems! Another time, a molded liner folded over on itself and caused the tire to wear out in a narrow section all the way around the inside of the tread. Is there any way to prevent this from happening? These tires are expensive!

TURAN THANT, Los Angeles, CA



The best way to keep your liners in place is to use a combination of tape and contact cement. Never use CA on a sponge or molded-rubber liner because it will make both materials lumpy and hard. Instead, stick a piece of reinforced battery tape or clear or brown Mylar package sealing tape onto the outside of the seam where the liner ends meet. Collapse the liner "donut" a little with your fingers, and coat the cut ends with contact cement. Allow the liner to return to round, and let the cement cure for an hour or so. As a final precaution, coat the inside of the tire carcass with contact cement just before you install the liner. Because the cement is still wet, it's relatively easy to position the liner properly, yet when it dries, it does a good job of holding the liner just where you want it. This method works with molded rubber and sponge liners.

You could, alternatively, install a seamless insert. Trinity* and HPI* (among other companies) offer one-piece inserts that are less susceptible to the problems you've experienced. Trinity's inserts are cut from a solid block of foam, while HPI inserts are molded.

Extreme Performance For You.

New, Performance Accessories For Your Racing Machines!



HPI RS4 Diff Pulleys: Precision machined, hard anodized aluminum diff pulleys. RRP 1539 fits HPI Nitro sedans. RRP 1528 fits HPI electric sedans.



RC10GT Diff Gear: Hard anodized, precision machined aluminum diff gear. RRP 1513.



RS4 Nitro 32 Pitch Conversion Kit: The slightly finer (than stock) pitch allows for more gear ratios. All components are precision machined for smooth and efficient performance. 17T hardened bell is precision cut from solid stock. RRP 1536.



HPI SuperLite™ Purple Aluminum Sedan Pinions: They're lightened, hard coated and precision cut. Available in 48P in 16T thru 28T, and 64P in 24T thru 38T. RRP 30XX (48P) and RRP 31XX (64P). Only \$5.25.



HPI RS4 Nitro Small Drive Pulleys: Precision machined and hard anodized aluminum drive pulleys. RRP 1538.



HPI RS4 Top Shaft Pulley: One piece pulley and shaft are precision cut and hard anodized. Purple anodized side flanges are pressed on. RRP 1527.



1998 ROAR On-Road National Champ John McIntosh:

"Robinson Racing Products give me a definite competitive edge - that's why I run them."

— John R. McIntosh II

"For over a decade, Robinson Racing has brought you, the racer, the highest performing gears and accessories available for RC racing."

ROBINSON RACING PRODUCTS · 4968 Meadow View Drive · Mariposa, CA 95338
Voice 209.966.2465 · Fax 209.966.5937 · www.robinsonracing.com



RRP

ROBINSON RACING PRODUCTS

TROUBLESHOOTING

In a Hole

I drive an older Team Losi buggy, and even though it isn't the newest car at the track, I do pretty well with it. Considering that I bought it for less than 100 bucks—including a radio—I'm very happy with its performance, especially in the stock motor class.

Unfortunately, the screw holes sometimes strip out—maybe because I'm the car's third owner and it has been repaired often. When that happens, I can usually find the part I need, but it seems a waste to throw away a perfectly good part just because of a bad screw hole. Sometimes the inner threads wear away completely, and the hole gets too big; sometimes, the part itself splits around the hole. How can I save a few bucks and keep my car running?

SAM LAWFLON, Denver, CO

I understand where you're coming from; I, too, have thrown away a perfectly good part because one or more of its screws could no longer be properly tightened. You've probably tried the "CA-and-pray" trick, in which you drip CA into the screw hole, wait for it to set, then run the screw back in and pray that it holds through the next heat. If you have tried this, you already know that this is, at best, only a temporary fix. I've tried other repair techniques, and most have failed.

There are two more effective solutions:

1. Fill the hole and retap the threads.

To fill the hole, mix some two-part epoxy with a toothpick or something similar on a small piece of paper or clean Lexan (I like Duro epoxy, which is available at most hardware and home-center stores). First, clean the hole out thoroughly with rubbing alcohol or lighter fluid. Don't use lacquer thinner or motor cleaner, as either may destroy the plastic or leave an oily residue that will prevent the epoxy from sticking properly. Coat the toothpick with epoxy and work it into the hole, being careful to fill the hole—and the remaining old threads—completely. Allow the epoxy to cure overnight,

and then drill and tap a hole for the screw you want to install there. Even if you use a self-tapping screw, first drill a pilot hole for it so that the part doesn't split when you put the screw in.



I've heard that JB Weld* also works well for repairing stripped parts, and since it's more like putty than runny epoxy, it might be easier to work with.

2. Jam something into the hole that the screw can bite into.

A brush shunt, toothpick, matchstick, or even a piece of aluminum foil may do the trick, but be very careful! If the screw hole is on the edge of a part, such as the edge of the gearbox case, this technique is more likely to further split the part than to fix the problem. Jamming works best when the hole is in the middle of a part and the load is thus spread over a greater area.

Sometimes, however, you just have to replace the piece entirely to ensure reliable performance.

Lighten Up

I'm always looking for a way to save weight on my FSR sedan. I've tried a bunch of lightweight stuff and even bought a postage scale to compare the weights of various parts. Having installed all the available graphite, nylon, titanium and aluminum chassis upgrades that I could find, I removed the speed control and receiver cases and covered the units in clear, battery-pack-size shrink-wrap from the hobby store.

After doing all this, it occurred to me that the body might be worth some attention. Do you have any ideas on ways to make the body a little lighter? [email] PHIL SOUNDER

Phil, it sounds as if you've attacked the weight situation with a great deal of vigor! I'm glad to hear that you avoided trying to lighten parts yourself, since that route often leads to broken pieces. I guess we can also assume that you don't enter sanctioned races, since most organizations mandate a minimum weight for this highly competitive class.

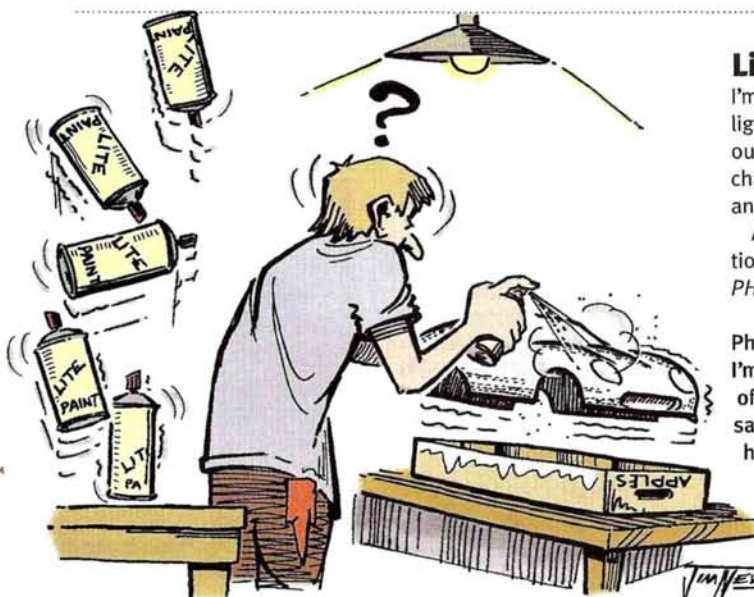
I can think of only two ways in which you can lighten the body shell on your touring car:

1. Go easy on the paint and decals. Consider the paint type and color you lay on the body. You can easily add 1 ounce or more to a body just by using a multicolored paint scheme or by laying on thick coats of paint and piling

on the stickers. If you can, use an airbrush and spray on only as much paint as you have to. If you're finishing your body with spray paints, pick white or black. They aren't the most exciting colors, but they don't require a heavy backing coat.

2. If the wing on your body of choice is held together or attached to the car with nuts and bolts, buy some nylon replacements. They weigh much less than steel and aluminum and are just as durable in this application.

*Addresses are listed alphabetically in the Index of Manufacturers on page 209. I



Understanding the 4-stroke machine

Right now, you might be saying, "Chris, before I take the time to understand a 4-stroke engine; I want to first understand why I should even consider using one." OK; fair enough question. Here are a few reasons to consider a 4-stroke engine:

- They can be made to operate very quietly so your neighbors are less likely to complain.
- They're far more fuel-efficient (fuel is expensive).
- They produce fantastic low-end torque (just ask my colleague

Steve Pond about the awesome acceleration his 4-stroke-powered SuperTen has coming out of a turn).

And—possibly the most important reason:

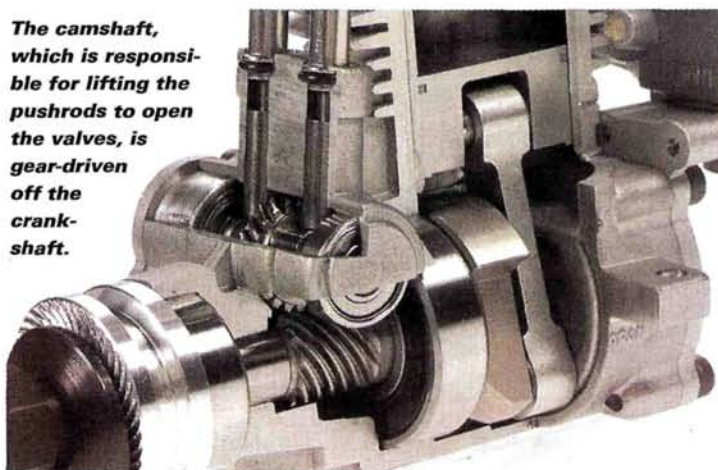
- They're totally cool machines—

similar in ways to auto engines—and produce a more authentic full-scale growl.

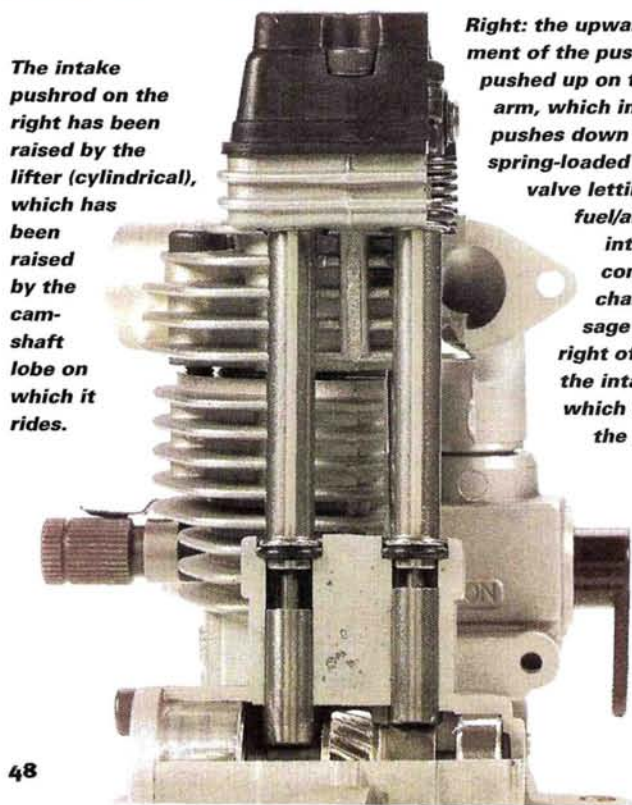
The biggest problem guys have with their first 4-stroke is learning how to tune them. You need to develop a totally different "ear" for listening to 4-strokes. Don't look for that "singing" sound of a 2-stroke because you ain't gonna find it. Unlike a 2-stroke, which has a

power stroke on every rotation of the crankshaft, the 4-banger has a power stroke on every other rotation of the crank (see diagram). To the 2-stroke "ear," the 4-stroke will sound as if it isn't producing full power. But trust me, it is. The 4-stroke is producing tremendous torque (twisting force) at these lower rpm. That's why you can go to much taller gearing with a 4-stroke.

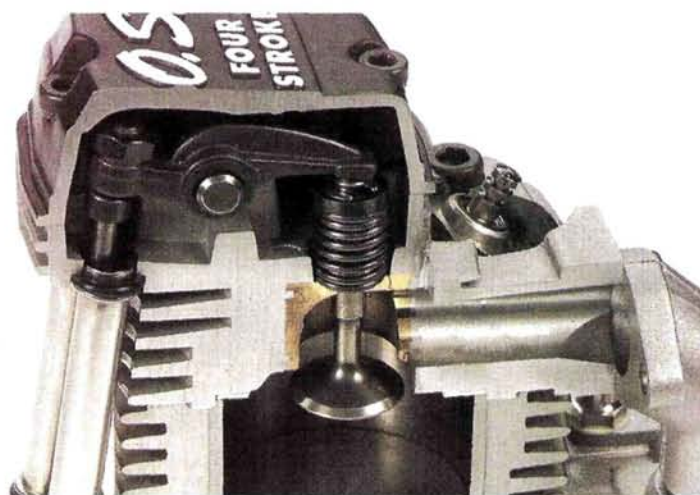
The camshaft, which is responsible for lifting the pushrods to open the valves, is gear-driven off the crankshaft.



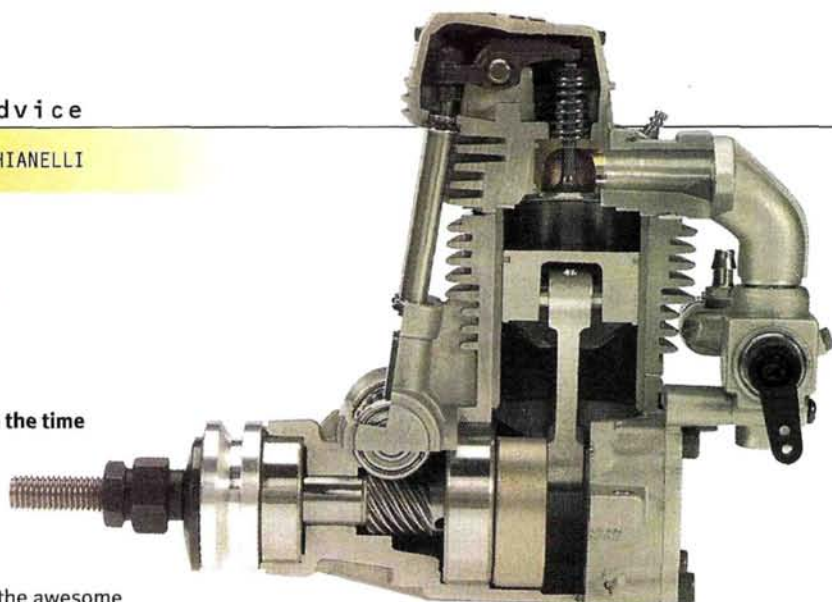
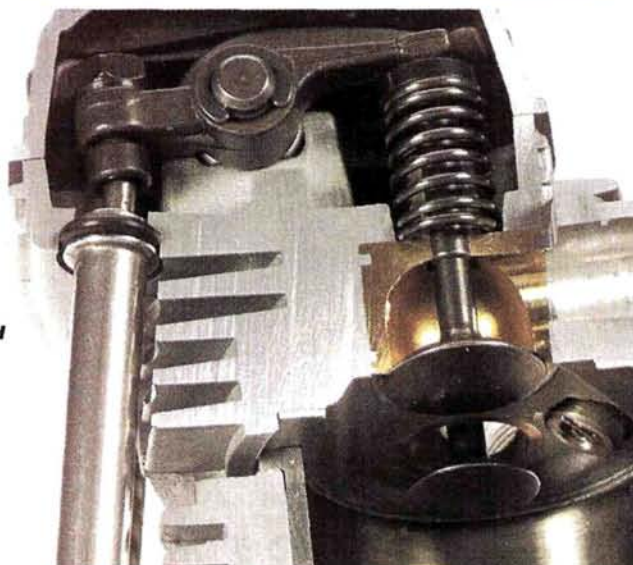
The intake pushrod on the right has been raised by the lifter (cylindrical), which has been raised by the camshaft lobe on which it rides.



Right: the upward movement of the pushrod has pushed up on the rocker arm, which in turn pushes down on the spring-loaded intake valve letting the fuel/air mix into the combustion chamber. The passage just to the right of the valve is the intake port, which leads in from the carburetor.



Right: the smaller valve is for exhaust and is actuated in exactly the same way as the intake valve by means of the other pushrod.



Why does a 4-stroke produce this higher torque?

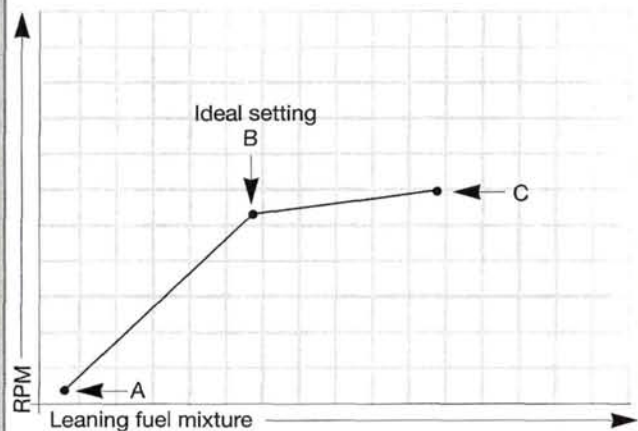
With the "crankcase-charged"-type 2-stroke engines we are so familiar with, the processes of intake and exhaust are overlapping events in which the incoming fuel/air mix helps push out the old burned gases. This is why 2-strokes are less fuel-efficient. Inevitably, some fresh fuel mix also escapes before the exhaust port can close. In a

4-stroke, however, one full stroke (a downstroke, basically) is dedicated to introducing a fresh charge of fuel/air mix. This mixture is then compressed and combusted before the exhaust valve opens to exhaust the burned gases. This greater control over the process leads to more complete burning of the fuel/air mix and therefore higher combustion-chamber pressure. These higher pressures are what give us the higher torque.



O.S. FS26S-C is the first 4-stroke marketed specifically for car usage. Rumor has it, other manufacturers will follow suite.

You guys are no dummies; I can tell by the email I receive. That being said, I've decided to just show you the internals of a 4-stroke-cycle engine and illustrate the four steps in the process. This will give you a greater intuitive understanding for what these engines are all about so you can contemplate them and learn more about how they work on your own. Also, the next time we talk more involved 4-stroke-cycle stuff, you'll be right there with me. ■



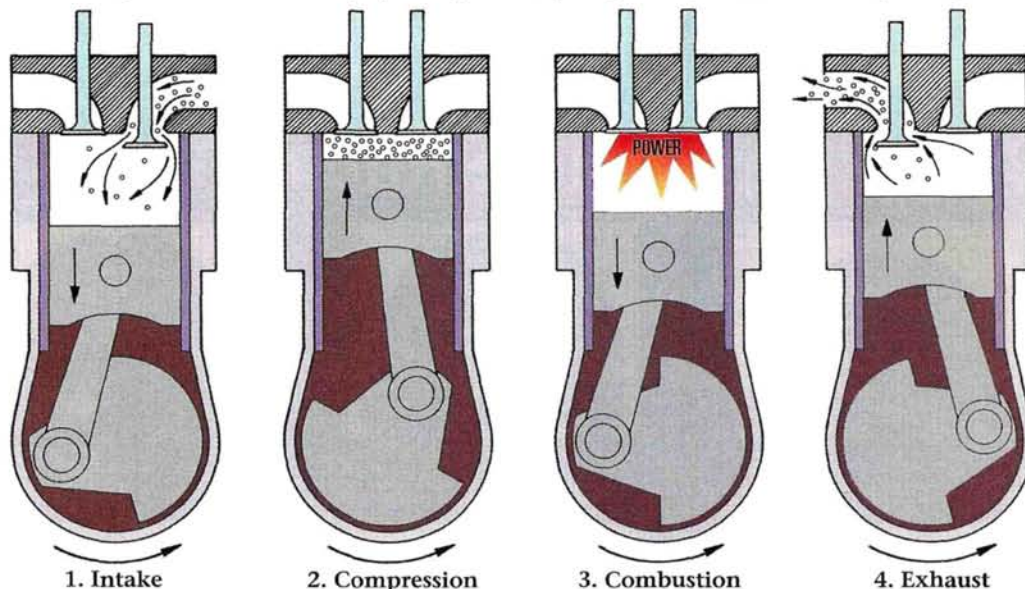
Tuning Visualization

I've found that visualizing this graph helps me tremendously as I tune a 4-stroke. I hope it will help you. Here's how I use this "tool." As you lean the main needle valve on a 4-stroke, there is a direct and immediate response toward higher rpm—to a certain point. This is the line between point "A" and point "B." While this would not conveniently plot as a true linear at a 45-degree angle in the real world, I visualize it as such to make this mental tool more user-friendly. The leaning that occurs between point



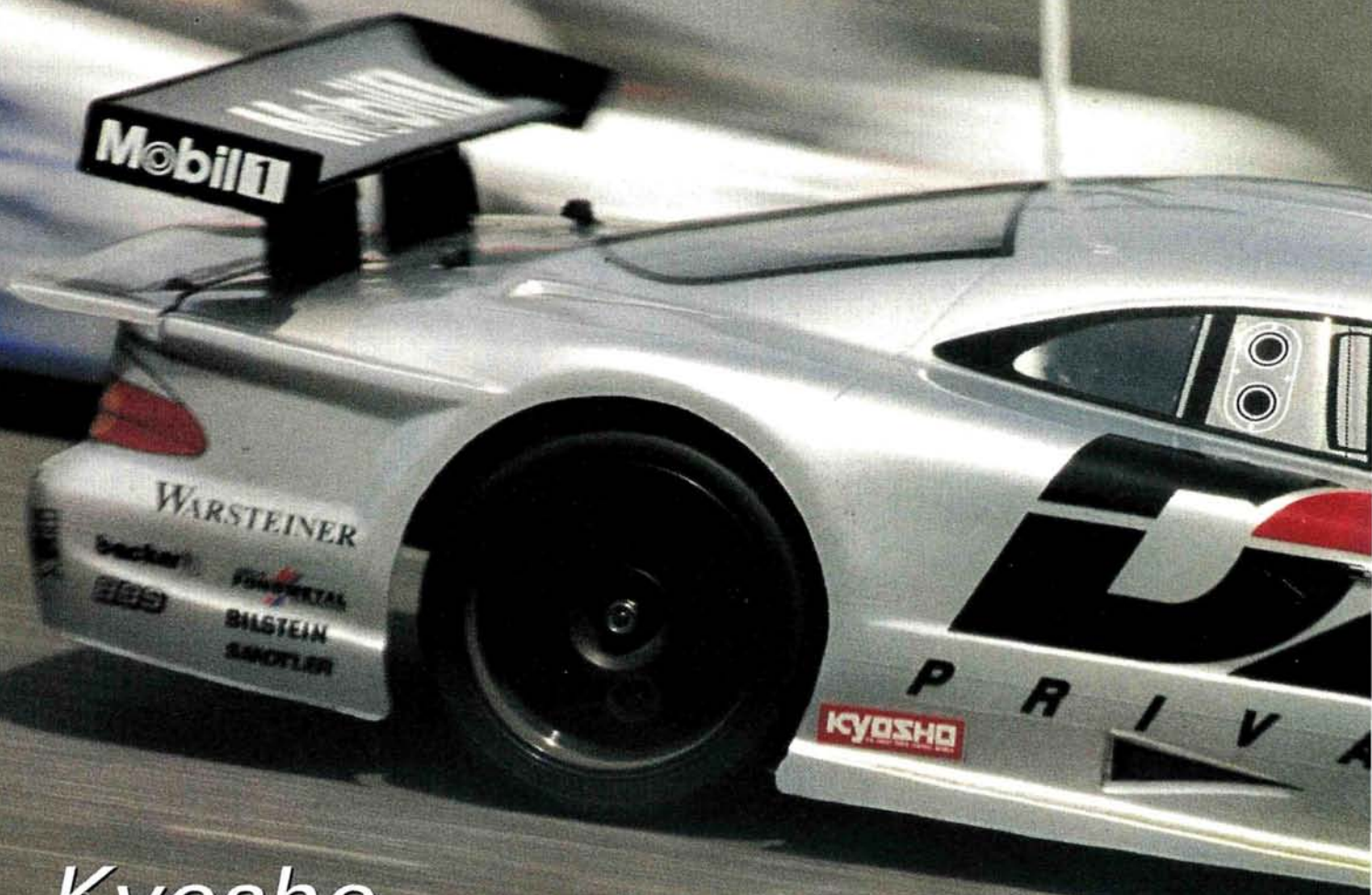
THE 4-STROKE-CYCLE PRINCIPLE

This diagram show the four steps (strokes) in a complete power cycle in a 4-stroke-cycle engine.



1. On the downstroke, the intake valve is opened and the fuel/air mixture is drawn into the combustion chamber. 2. On this upstroke, the intake valve has closed and the fuel/air mixture undergoes compression. 3. Ignition takes place by means of the glow plug (not shown); the fuel/air mix explodes, and the piston is forced down for the second time in the cycle. This is called the "power stroke." 4. The exhaust valve is open and the piston moves up for the second time in the cycle, and the burned gases are expelled out through the exhaust valve into the muffler.

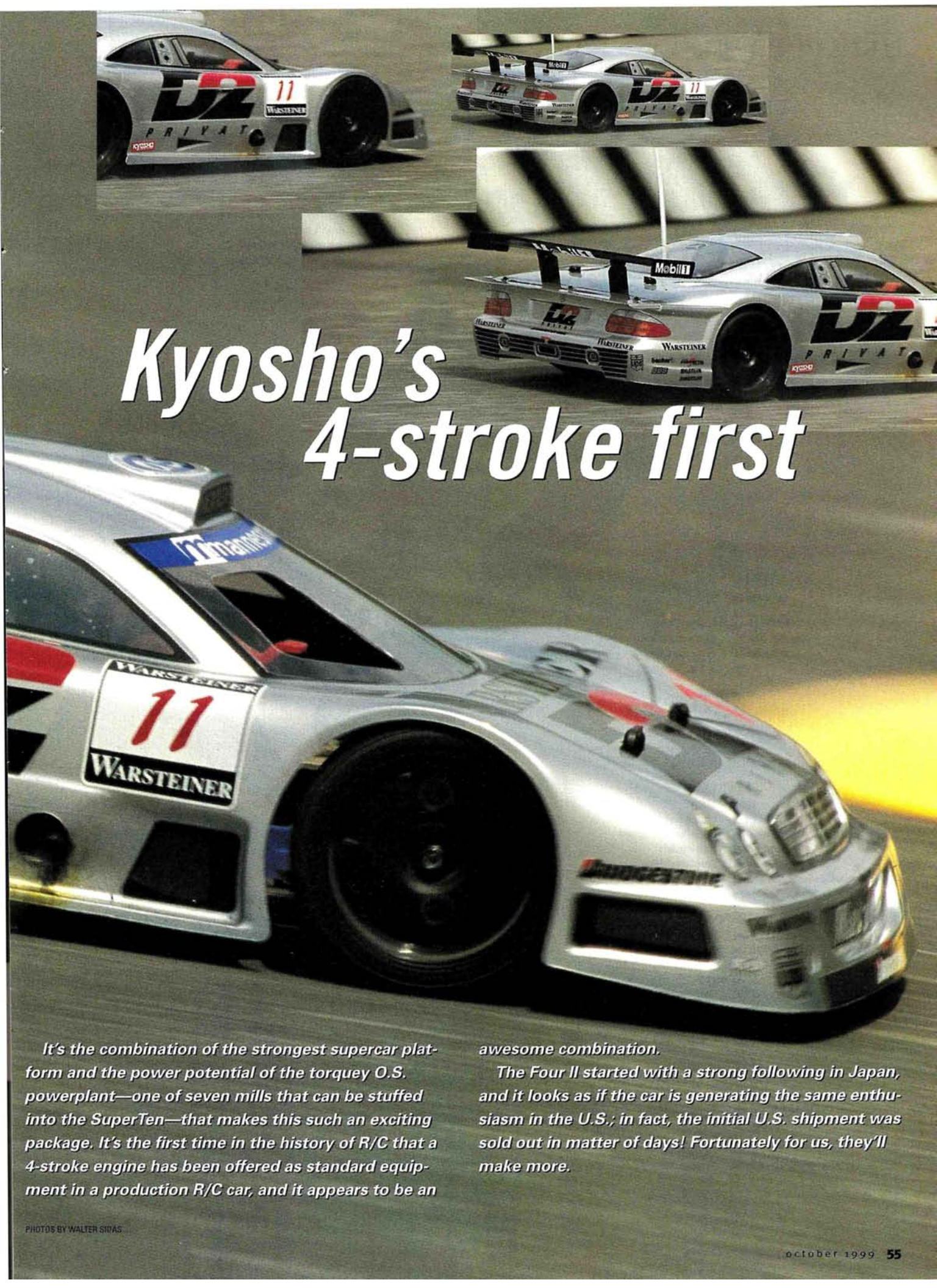
"B" and point "C" yields very little rpm gain—a few hundred rpm at best—yet heat continues to build. I always try to adjust a broken-in 4-stroke on the B/C "plateau," but as far to the left of the plateau as possible without falling off the edge. This ideal setting is of course at point "B." You'll know you've fallen off the edge if your engine has a sharp rpm drop while you're richening the mixture. Conversely, you'll know you're venturing too far out on the "plateau of increasing heat" if the main needle becomes less responsive and leaning suddenly doesn't yield the same rpm increase as it did just moments before. Go too far out on the "plateau," and your 4-stroke may stop abruptly. Be careful, and always use safety glasses.



Kyosho **SuperTen Four II** by Steve Pond

"TRICK" is the first word that comes to mind when I want to describe the Kyosho SuperTen Four II. We all have our reasons to buy one car rather than another: it's the fastest, best handling, trickiest, coolest, most popular, truly unique, least expensive, most expensive etc., etc. The 4-stroke SuperTen fits just about every one of these descriptions—the exception being "least expensive"—but I think "trick" best describes this king-size thumper.*

The "trick" part of this latest SuperTen doesn't come from its chassis; in fact, the chassis is very much a "garden variety" SuperTen. It includes the usual aluminum upper and lower chassis plates, double A-arm suspension at all four corners, bevel-gear differentials and an efficient shaft-drive system. What makes the latest Super so interesting is its powerplant—the O.S. FS26S-C 4-stroke—the first O.S. thumper designed exclusively for R/C cars.

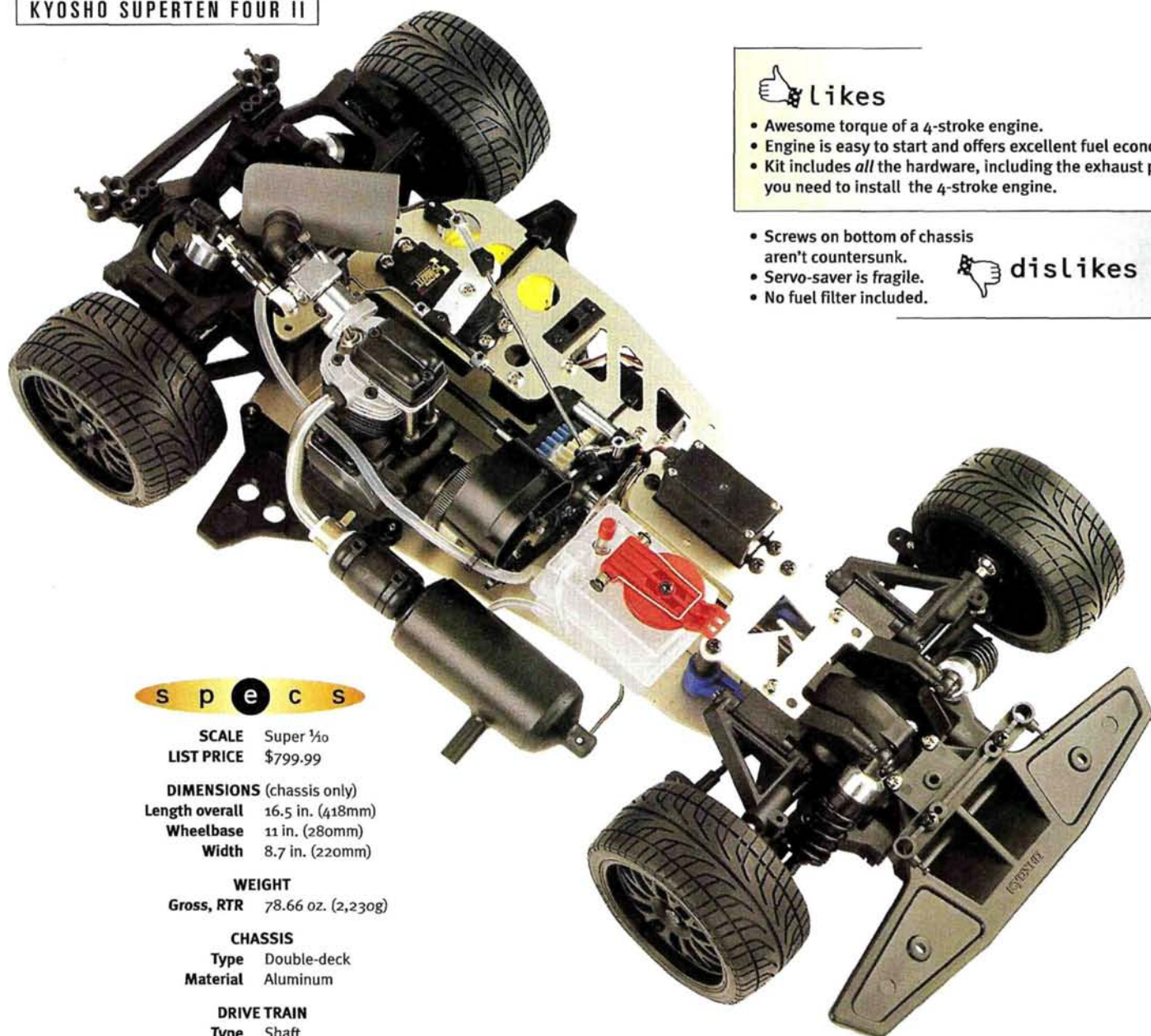


Kyosho's 4-stroke first

It's the combination of the strongest supercar platform and the power potential of the torquey O.S. powerplant—one of seven mills that can be stuffed into the SuperTen—that makes this such an exciting package. It's the first time in the history of R/C that a 4-stroke engine has been offered as standard equipment in a production R/C car, and it appears to be an

awesome combination.

The Four II started with a strong following in Japan, and it looks as if the car is generating the same enthusiasm in the U.S.; in fact, the initial U.S. shipment was sold out in matter of days! Fortunately for us, they'll make more.



s p e c s

SCALE Super 1/10
LIST PRICE \$799.99

DIMENSIONS (chassis only)
Length overall 16.5 in. (418mm)
Wheelbase 11 in. (280mm)
Width 8.7 in. (220mm)

WEIGHT
Gross, RTR 78.66 oz. (2,230g)

CHASSIS
Type Double-deck
Material Aluminum

DRIVE TRAIN
Type Shaft
Primary Clutch bell/spur
Transmission Centrifugal 2-speed
Differential(s) Gear-type
Drive axles Steel dogbone
Final drive ratios (1st/2nd gears) 8.04:1/5.19:1
Bearings/bushings Bearings

SUSPENSION
Type Double A-arm
Damping Oil-filled coil-over shocks

WHEELS
Type (F/R) Narrow/wide mesh

TIRES
Type Low-profile, high-grip treaded

POWERPLANT
Engine O.S. FS26S-C 4-stroke
Carb 4.5mm single-needle rotary
Exhaust system Tuned muffler

PERFORMANCE
Top speed 35.65mph
Engine rpm@ top speed Approx. 20,062

Likes

- Awesome torque of a 4-stroke engine.
- Engine is easy to start and offers excellent fuel economy.
- Kit includes *all* the hardware, including the exhaust pipe; you need to install the 4-stroke engine.

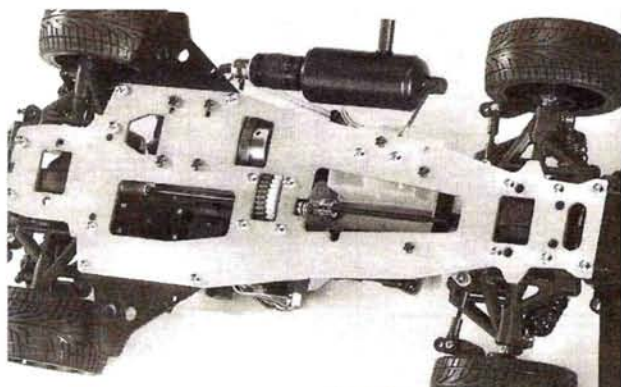
- Screws on bottom of chassis aren't countersunk.
- Servo-saver is fragile.
- No fuel filter included.

dislikes

What's in the box?

The SuperTen Four II is remarkably similar to a standard issue SuperTen, but the addition of a 4-stroke engine brings with it some notable features required to support this unconventional powerplant:

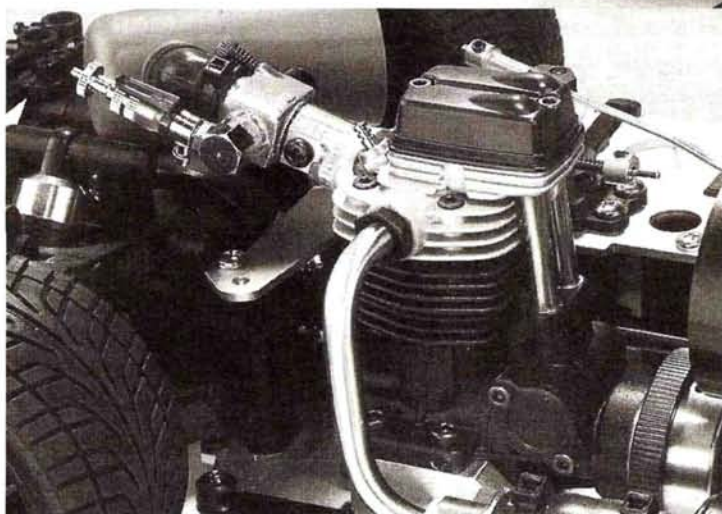
- Its included 2-speed transmission is designed to exploit the O.S. 4-stroke's stump-pulling low-end power while allowing the lower-revving mill to offer a competitive top speed.
- A small-diameter exhaust manifold is coupled to a 4-stroke-specific pipe. Since the 4-stroke uses mechanically actuated valves, it does not need to rely on a precisely calibrated tuned pipe to operate with peak efficiency.
- A new clutch, designed to engage at lower rpm, takes advantage of the 4-stroke's broad powerband.
- Although there's nothing "4-stroke" about them, it should be noted that all the critical friction points in the drive train are equipped with metal-shielded bearings (although I would prefer to see rubber-sealed units).



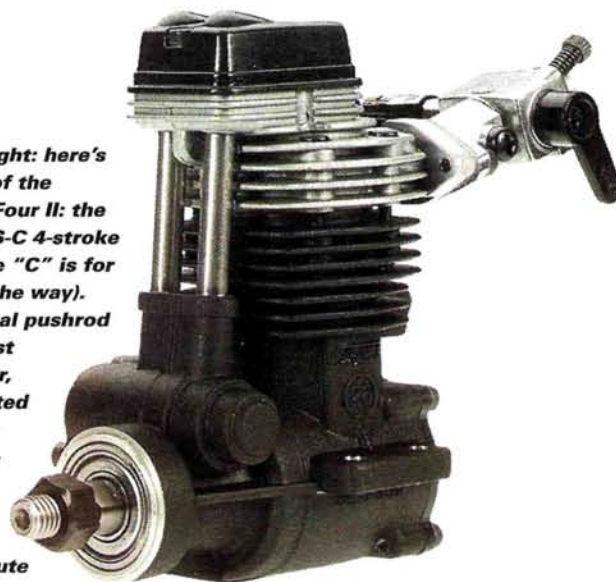
Left: this underside view highlights the SuperTen's shaft drive, chunky diff housings, and unusually short pipe. Countersunk screws are noticeably absent from the SuperTen's chassis, but the plastic nerf wings are a nice touch.

Right: the 2-speed tranny is tucked into a narrow center bulkhead. The belt-driven fan guarantees a steady flow of cooling air, and since it is driven by the engine's crank instead of the clutch bell, the fan is always turning.

Right: the aluminum pivot-ball retainers are threaded deep into the steering knuckles. The 12mm wheel hex is identical to those found on 1/10 tourers, but the beefy suspension arms will never be mistaken for 1/10 sedan parts.



Left and right: here's the heart of the SuperTen Four II: the O.S. FS26S-C 4-stroke engine (the "C" is for "car," by the way). The external pushrod guides, cast valve cover, rear-mounted carburetor and barrel-shaped cam housing all contribute to the torquey mill's unique look.



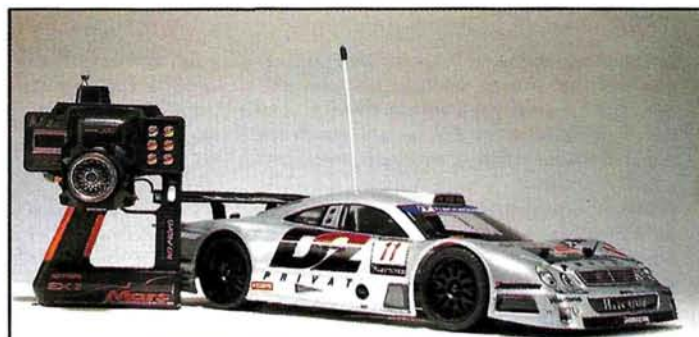
PERFORMANCE

My first experience with a 4-stroke-powered SuperTen was in Osaka, Japan, when I visited the O.S. factory. The people there were kind enough to let me wring out two versions of the SuperTen—4-stroke- and 2-stroke-powered—so I'd be able to compare them.

I have to admit that before I put the screws to the 4-stroke version, I wasn't entirely confident that it could stay in step with a screaming 2-stroker. Sure, the 4-stroke has more than twice its displacement, but 4-strokes have historically been shown to have a horsepower handicap when compared with 2-strokes. What I didn't count on was *this* 4-stroke's devastating torque. The Four II's brute acceleration is excellent.

The heavyweight clutch shoes engage more quickly than normal to take advantage of the 4-stroke's incredible low-end power. When the second gear of the included 2-speed transmission engages, it kicks the Four II up to a terminal velocity that matches that of a 2-stroke.

My brief comparison of the two cars showed me that the Four II keeps pace with the .15ci 2-stroke version: their lap times were virtually identical on the large, technical O.S. circuit. I came away from my visit with a new attitude about 4-stroke engines.



TEST GEAR

KO Propo* EX-1 Mars radio • KO Propo FET-2001 and FET-2004 servos • Brückner Hobbies* 5-cell receiver pack • O'Donnell Racing 20-percent-nitro racing fuel • Nuova Faor* stainless-steel starter box

My stateside experience with our own test cars revealed virtually the same results, but I had the opportunity to do a more detailed analysis of the differences you can expect and of the 4-stroke's performance.

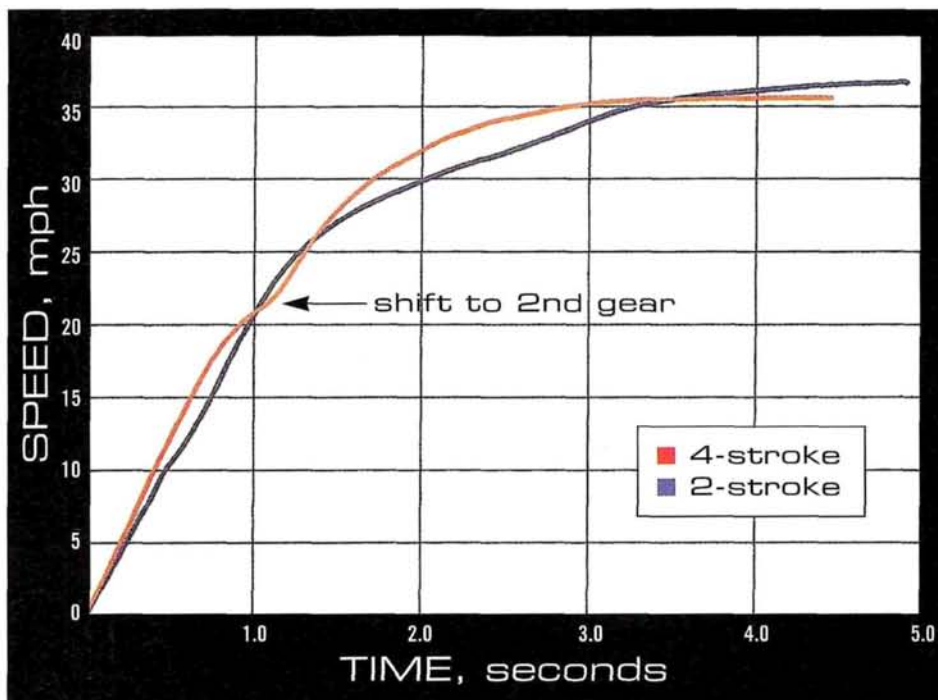
ACCELERATION-TESTING SYSTEM

Lap times alone don't tell exactly what advantages and disadvantages we can expect from a 4-stroke, so my next battery of tests were conducted under the watchful eye of our Acceleration-Testing System (ATS). I prepped the SuperTen Comp III kit featured in the September '99 issue to run against the Four II.

What was already evident by the feel of the Four II was verified in my tests. The FS26S-C's grunt outmatched the 2-stroke .12 LD coming out of the hole. The Four II pulled about 2 feet ahead of the Comp III in the first second, but it lost a little pace as the transmission shifted from first to second. Once in second gear, however, the Four II readily pulled away from the Comp III with a lead of over 6 feet at the 4-second mark.

At this point, the Four II had already traveled almost 160 feet—equal to or beyond the length of the long straightaway at a respectable on-road track. The Comp III eventually spooled up and caught the Four II, but its early lead clearly showed the Four II to be more than powerful enough to meet or exceed the performance levels of a 2-stroke-powered car with a single speed.

Even though the Comp III clipped the Four II in top speed, it didn't catch the thumper until about the 210-foot mark. It appears that the .15 CV or LD would be a better match for the



FS26S-C, but even then, there aren't enough ponies to reel in this potent powerplant—only enough to reduce the performance differential.

Granted, the 2-stroke cars seem to have enough to make up the difference in the straights, but this portion of my tests clearly

BUILDING & SETUP TIPS

Despite its complex appearance, the Four II is pretty easy to build—as long as you're an experienced builder of fuel-powered cars. If you lack experience but can't resist the urge to have one of these thumpers, have an experienced pair of eyes look over your shoulder now and then.

■ **Rule 1.** Use Loctite®! The kit doesn't include any, and you'll need it often when you build this machine. A 4-stroke can really shake things up, so use Loctite on the fasteners—unless you like having to scan the track for lost parts.

■ **Step 4.** Before assembling the front and rear differentials, I filled them with Kyosho's optional 3000WT silicone lube. This smoothes their operation and avoids the unpredictability common with greased diffs. When assembling the diffs, I seal the housings with a very thin bead of silicone sealer. The silicone lube will quickly leak out if you don't do this, so plan to use sealant if you intend to use silicone diff lube.

■ **Steps 6 and 15.** I prefer to thread the aluminum pillow-ball retainers into and out of the hub carriers a few times. Doing so helps cut deeper threads in the carriers, and it removes any aluminum fragments that may have come loose from the pillow-ball retainers. This ensures smooth suspension and steering operation, and you won't have to readjust the retainers for a while.

■ **Step 11.** Assembling the cooling fan presents a minor challenge. It's difficult to get a good grip on the fan shaft when installing it in the fan housing. Grab the shaft's shoulder area, and tighten the nut as much as your grip will allow. The last thing you want is to have the fan come loose when it's turning at 40,000rpm (it's geared to spin much faster than the engine)!

■ **Step 12.** The instructions recommend that you cut off part of the center bulkhead to allow clearance for the fan belt. You're supposed to cut through the center of a hole that is in the bulkhead. Instead, cut the entire hole out of the bulkhead. You'll have even more fan-belt clearance.

■ **Step 17.** File or sand the front edge of the tabs on top of the rear bulkhead (where the rear body mounts will eventually be attached). There wasn't quite enough clearance between these and the rear upper suspension arms, and if you don't file the tabs, the suspension will bind slightly. It's also easier to attach the rear bulkhead once the left and right rear bulkheads have been snugged to the chassis plate.

■ **Step 19.** Before installing the last E-clip, I placed a spare 3mm (inside diameter) washer over each of the shock shafts. This prevents the piston from sliding up and down the shaft between the E-clips. Be sure the washer you select is not so big that it covers the notches in the piston.

■ **Step 21.** I've previously found that 20WT shock oil (included) is far too light to provide adequate damping. Instead, I filled the front shocks with 60WT and the rears with 50WT Team Losi® Certified shock fluid.

■ **Step 25.** Be very careful when you thread the pillow ball into the molded-plastic servo-saver, which is very brittle and might crack. I cracked mine and had to run without it. In fact, to avoid damaging the servo-saver, I advise you to drill a hole for the pillow ball.

■ **Step 33.** Install a 3mm washer between the outermost bearing in the clutch bell and the 27-tooth fan pulley. The clutch bell is supposed to spin freely on the crankshaft when the clutch isn't engaged. The fan pulley, on the other hand, is attached directly to the end of the crankshaft. When assembled according to the instructions, the clutch bell and the inner flange of the fan pulley hit each other. A 3mm washer adds just enough clearance to prevent this from happening.

■ **Before hitting the track,** reduce the ride height to 6 or 7mm at all corners to lower the car's center of gravity (CG) and improve handling.

■ **Break the engine in properly.** When running a 4-stroke for the first time, it demands greater care than a 2-stroke because of the differences in its construction and its higher number of moving parts. Run four or five tanks of fuel through it while the car is suspended on a starting stand or a section of 2x4.

Vary the throttle position, too. Quickly apply up to 3/4 throttle a few times (at 30-second intervals), but don't let the engine rev too high (if the transmission shifts into second gear, you've revved it too high).

Having completed break-in, you should still take it easy through the first two tanks with the car on the ground. It will give you a chance to get a "feel" for the engine, and it gives the engine a little chance to warm up under load before going full clamp.

How is a 4-stroke different from a 2-stroke?

■ **FUEL.** A number of manufacturers offer fuel for 4-strokes. Unlike a 2-stroke, a 4-stroke doesn't have the benefit of raw fuel and oil pumping through its crankcase for lubrication, so 4-stroke fuels usually contain more lubricant.

The Kyosho's distributor recommends Omega 4-stroke fuel with 15 percent nitro, but my local hobby shops don't carry it. I dipped into my supplies and decided to try O'Donnell* 20-percent racing fuel, which has worked well for me in a variety of 2-stroke applications; in fact, I usually have a healthy amount of lubricant dripping from the pipe at the end of a race day. I figured that if any traditional car fuel would be suitable for a 4-stroker, this would be the one. I've run about a gallon of O'Donnell fuel through the engine, but it's still too early to tell whether it will be a suitable replacement for the recommended Omega juice. The engine has, however, run very strongly and appears to be in excellent condition.

O.S. doesn't recommend a specific brand or type of fuel but does say that it should contain at least 18 percent lubricant and up to 40 percent nitro.

■ **GLOW PLUG.** Four-stroke plugs look like those used in 2-strokes, but they are unique to the thumpers. A 4-stroke must pass through a "dead" cycle in which the piston comes up in the cylinder to

expel the burned fuel as exhaust. When the piston is on the next upstroke with a fresh dose of fuel and air, the glow plug must be hot enough to ignite the mixture. Making a standard glow plug hot enough to ensure this would require a very thin, fragile coil that would be very unreliable. Four-stroke plugs have a high concentration of platinum that allows the coils to retain their thickness and durability while staying hot enough through the dead cycle to ignite the fuel/air mixture the next time around. The bottom line: use glow plugs designed for 4-strokes. They're a little more expensive, but you'll be glad you spent the money.

■ **STARTING.** Firing up the FS26S-C is no more difficult than starting a non-pull-start 2-stroke. A starter box and a standard glow igniter are all you'll need. The Four II includes a pretty heavy flywheel that's intended to keep the engine spinning through its four cycles, but it has no ill effect on ease of starting; in fact, the engine fires relatively easily and, unlike a cold 2-stroke, isn't prone to loading up; it just fires and chugs along at idle for as long as you want. Just don't try to stop it by touching the flywheel with a fingertip; the flywheel's extra mass combined with the engine's torque will handily peel off some skin before the engine even comes close to shutting off. Just pinch the fuel line and save your fingers.

■ **FUEL SYSTEM.** The FS26S-C comes with an O.S. 1A carburetor that features a single mixture needle and a 4.5mm bore (1mm smaller than those used on most competition 2-strokes). There are no air bleeds or fixed low-speed mixture settings; it's a simple, single-needle design; I speculate that the engine's limited

rpm range requires only a single mixture point. The carb included with the Four II kit has the mixture needle installed on a 90-degree fitting instead of the straight fitting used in the boxed engines. The reason for this seems to be that it allows more clearance for the right rear wheel and suspension.

The 75cc, standard fuel tank is the same as those found in 2-stroke SuperTen and PureTen cars.

■ **CLUTCH.** The unique clutch was specially designed for a 4-stroke. It has larger, heavier clutch shoes that engage faster than those on a standard clutch. This design takes advantage of the massive low-end torque produced by the O.S. FS26S-C.

■ **EXHAUST.** The exhaust system obviously differs from those we're used to seeing on 2-strokes. For maximum power output, 2-strokes require expansion chambers, or tuned pipes. The engine is cramming four events into two strokes, so a 2-stroke needs a little help from the exhaust system to maximize efficiency and horsepower.

A 4-stroke has mechanical valves that facilitate fuel/air intake and exhaust flow. This makes them more efficient and less dependent on the exhaust system. You'll notice that the Four II has a rather thin header pipe and a muffler that lacks the intricate angles and other design elements seen on tuned pipes. That's because a 4-stroke engine is largely unaffected by its exhaust system. The beauty of these engines is that, as long as nothing restricts the exhaust flow, it doesn't matter if you use a soda can for a muffler; just keep those fumes flowing smoothly and your 4-stroke will be a happy camper!

showed that the FS26S-C is not only able to keep pace, but it can actually run in front, too.

I was made aware of a couple of other differences that weigh heavily in the favor of the 4-stroke:

- It can idle for seemingly infinite periods without a problem. A 2-stroke engine has a tendency to "load up," or become very rich and sluggish, when it's permitted to idle for short periods (only 15 to 30 seconds when the low-speed mixture is properly adjusted).

The FS26S-C has a single-needle carb that doesn't even have a *fixed* low-speed fuel-mixture adjustment; there just isn't one there—nada, zip, zero. A main mixture needle apparently handles the fuel/air mixture from idle right up to maximum rpm. I could speculate that the single needle is all that's necessary for the FS26-C's limited rpm range, but no matter how you slice it, there's only one adjustment, and it's simple and effective. How effective? Well, I let the engine idle for more than 5 minutes, and it was still able to take off like a scalded cat. At the same time, the mixture was ideal for all-out performance.

- The FS26S-C runs *forever* on a tank of fuel. Using the same O'Donnell fuel in both cars, I ran at race pace for quite a few tanks (both 75cc) to assess fuel use. The 2-stroke ran as expected—an average of 7 minutes, 32 seconds per tankful. The Four II was quite a different story. You'd think that an engine with more than twice the displacement would drink up the fuel; after all, more air equals more fuel—right? Well, I couldn't have been more surprised when the Four II repeatedly ran for longer than 10 minutes on a single tank of fuel! It clocked an average of 10 minutes, 47 seconds per tankful. I was soon thinking, "This thing is really starting to grow on me!"

FINAL THOUGHTS

Will the SuperTen Four II be the new hell hound of the SuperTen class? Well, it certainly has its performance benefits, and it's more user-friendly when it comes to starting and running the engine.

It also has the benefits of excellent fuel economy and needs less frequent maintenance. When it is eventually time to look inside the engine, however, you'll need more skill for its maintenance and special tools for valve adjustment (not included in the kit). It's a safe investment if you know your way around an engine, if you're new to nitro-powered cars, just be cautioned.

The SuperTen Four II's appeal, however, goes beyond paper performance. It has an element of being different—even unique—and that makes it a little easier to pull all those Benjamins out of your pocket.

*Addresses are listed alphabetically in the Index of Manufacturers on page 209.



by Doug Mertes

Tamiya **TA03R-TRF**

T AMIYA * USUALLY
RELEASES its kits as
budget-priced "sport" models

followed later by upgraded kits, but the

TA03 series began life in "Pro" trim to announce its competitive intentions. A David Jun Edition followed, and it included virtually every factory hop-up. Tamiya now extends the factory hot-rod treatment to the rear-motor TA03R, which receives the TRF (Tamiya Racing Factory) designation to reflect its hopped-up status. This chassis kit is the premier offering in the TRF series, a line of race-oriented equipment designed for serious drivers. The real question from pavement thrashers, however, is whether the TA03R-TRF is truly competitive. Read on to find out.

FACTORY RIDE



s p e c s

SCALE 1/10
LIST PRICE \$498

DIMENSIONS
Wheelbase 10.2 in. (259mm)
Width (F/R) 7.1/7.7 in.
(180/196mm)

WEIGHT
Gross, RTR 54.5 oz. (1,545g)

CHASSIS
Type Double-deck plate
Material Graphite

DRIVE TRAIN
Type Belt-driven front and rear gearbox
Primary Pinion/spur
Differential(s) (F/R) One-way/ball
Bearings/bushings Bearings

SUSPENSION
Type Lower A-arm w/fixed-length upper link
Damping Oil-filled, aluminum-body shocks

WHEELS
Type One-piece molded plastic
Dimensions (DxW) 2x1 in.

TIRES
Type Tamiya A-compound slick w/sponge liners

ELECTRICS
Not included

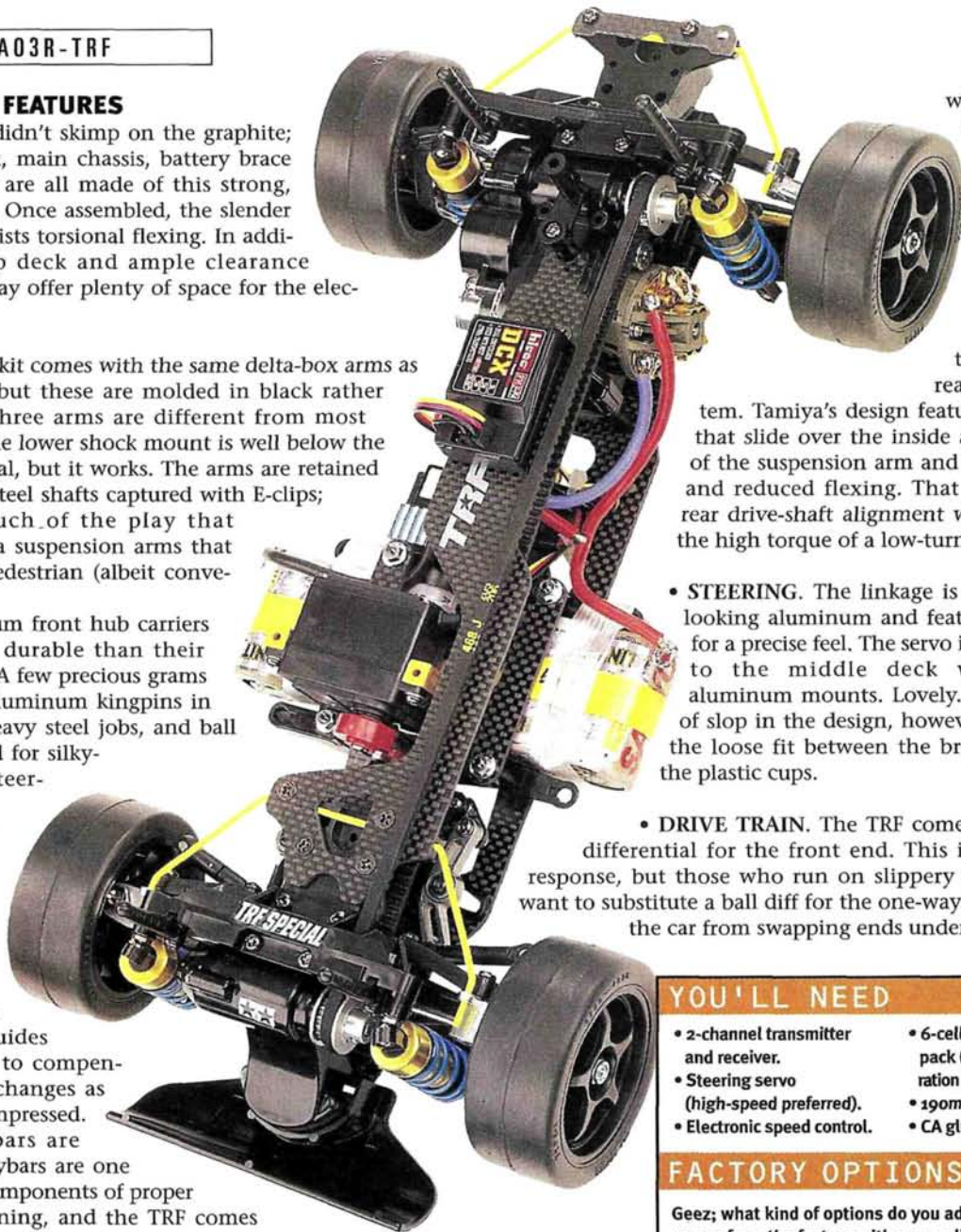
KIT FEATURES

• **CHASSIS.** Tamiya didn't skimp on the graphite; the TRF's upper deck, main chassis, battery brace and swaybar mount are all made of this strong, lightweight material. Once assembled, the slender chassis effectively resists torsional flexing. In addition, the broad top deck and ample clearance behind the battery tray offer plenty of space for the electronic components.

• **SUSPENSION.** The kit comes with the same delta-box arms as previous TA03 kits, but these are molded in black rather than gray. The oh-three arms are different from most sedan arms in that the lower shock mount is well below the centerline. It's unusual, but it works. The arms are retained with 3mm stainless-steel shafts captured with E-clips; this eliminates much of the play that plagues other Tamiya suspension arms that are mounted with pedestrian (albeit convenient) screw-in pins.

The TRF's aluminum front hub carriers should prove more durable than their plastic counterparts. A few precious grams are saved by using aluminum kingpins in place of the usual heavy steel jobs, and ball bearings are provided for silky-smooth, slop-free steering-arm movement.

To suspend the car, Tamiya equips the TRF with its popular aluminum shocks. These anodized, super-low-friction shocks feature Teflon pistons and shaft guides and utilize bladders to compensate for oil-volume changes as the shock shaft is compressed. Color-coded swaybars are also in the box. Swaybars are one of the most critical components of proper sedan suspension tuning, and the TRF comes



with 'em front and rear. Yellow bars are spec'd, but harder bars are available for high-traction asphalt and carpet tracks. Aluminum uprights bolster the strength of the rear suspension sys-

tem. Tamiya's design features four "fingers" that slide over the inside and outside edges of the suspension arm and result in less play and reduced flexing. That makes for better rear drive-shaft alignment when subjected to the high torque of a low-turn modified motor.

• **STEERING.** The linkage is of durable, trick-looking aluminum and features ball bearings for a precise feel. The servo is attached directly to the middle deck with anodized-aluminum mounts. Lovely. There's still a lot of slop in the design, however, mainly due to the loose fit between the brass ball ends and the plastic cups.

• **DRIVE TRAIN.** The TRF comes with a one-way differential for the front end. This increases steering response, but those who run on slippery parking lots may want to substitute a ball diff for the one-way. This will prevent the car from swapping ends under braking.

YOU'LL NEED

- 2-channel transmitter and receiver.
- Steering servo (high-speed preferred).
- Electronic speed control.
- 6-cell stick-type battery pack (side-by-side configuration may be used if taped in).
- 190mm sedan body.
- CA glue for tires.

FACTORY OPTIONS

Geez; what kind of options do you add to a car that comes from the factory with 27 goodies in the box? Believe it or not, there are still some alternative replacement parts worth considering:

- **Tuned springs—part no. OP-163.**
To dial in the suspension, pick up a set or two of tuned springs. The kit comes with "hard" blue ones, but you may need softer red or yellow ones to optimize handling.
- **Swaybars—53276.**
Stiffer swaybars (blue) will work better on carpet tracks or sticky, treated asphalt, while the softer red units will allow more traction on bumpy surfaces. For the really rough lots, leave the swaybars off!
- **Adjustable upper camber links—53192.**
Although the stock upper links offer good all-around geometry, the adjustable links will let you experiment. They'll also allow you to compensate for camber gain when "slamming" the car on smooth tracks.
- **Rear body-post brace—53285.**
This helps to prevent the body from rubbing on the rear tire sidewalls owing to body-post flexing.
- **Ball diff—53267.**
To reduce steering response and enhance braking, install a ball diff in place of the kit's one-way unit.

BUILDING & SETUP TIPS

Thanks to the excellent packaging and comprehensive instructions, this fairly complex kit goes together right the first time. I like that Tamiya now packages every part needed for a series of steps in a single bag, instead of

making you fish through bags of related fasteners to complete a step. It's easier to take breaks from your project if you can assemble it in stages.

- Make sure you install the one-way bearing for the front differential in the proper direction, or the wheels won't turn when you hit the throttle.
- You won't need to buy any special tools, but an Allen wrench for the 3mm setscrews and high-quality no. 1 and 2 Phillips-head screwdrivers make things easier.
- Be careful when you tighten the kingpins; you'll bind up the hub carrier's bearings if you overdo it.
- Tamiya's ball-diff grease works well, but I prefer to use Associated* diff lube on the balls and either MIP* CVD red grease, Tamiya ceramic lube, or Associated black grease on the thrust-bearing assembly.
- If you're setting up your car for the Tamiya TCS series, hard-wire your motor and use a low-loss connector for the batteries. Stick packs fit the supplied battery tray best, but side-by-side packs will fit if you leave the caps off the battery tray and tape the cells in.
- Remove the silicone molding agent from the rubber tires and plastic rims with denatured or isopropyl alcohol. If you don't, the tire may squirm off the rim at the first high-speed corner. Ouch!



TEST GEAR

Futaba* 3PDF FM transmitter • Hitec dual-conversion receiver and crystals • Hitec HFX ESC • Trinity World Tech VIS-enhanced Sanyo* 2000 batteries • Hitec 525MG metal-gear steering servo • Trinity 11-turn, triple-wind modified motor

Tamiya's excellent universals equip the front gearbox. Although the front and rear transmission designs are identical to those on other TA03R kits, they're enhanced with an 0.04 module ("metric 64 pitch") spur and pinion, superlight machined countershafts, durable aluminum 15-tooth drive pulleys and an Aramid-fiber drive belt that's stronger, narrower and more efficient than the one found on garden-variety oh-threes. Equipped with a ball diff that uses a one-piece thrust bearing, a metal motor mount and an aluminum heat sink, this is one of the smoothest trannies in the business. It's hooked up to the rear drive wheels with a pair of anodized dogbone drive shafts that are so light that they practically float out of your hand.

• **WHEELS AND TIRES.** These black versions of Tamiya's famous 5-spoke wheels may not increase performance, but they are attractive. Shod with TCS-legal reinforced Type-A slicks and high-density foam inserts, they're some super-sticky sneakers. Anybody wanna measure cornering speeds?

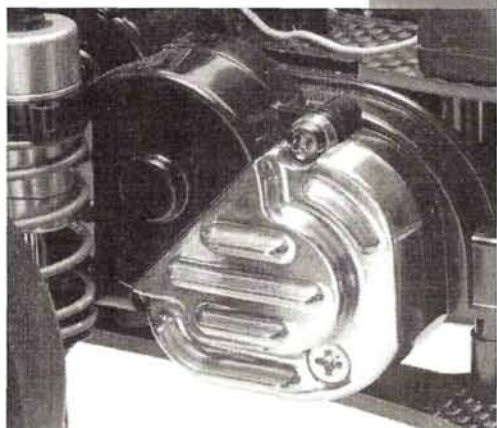
PERFORMANCE

What happens when you put an 11-turn modified motor, premium electronics and high-voltage cells in a touring car and yank the throttle? Any car will be fast—make that super-fast—when it is fitted with that equipment combination, but not every car feels comfortable while putting that much power to the pavement. This is where the TRF really shines, demonstrating that good basic design mated with superior materials results in stunning execution.



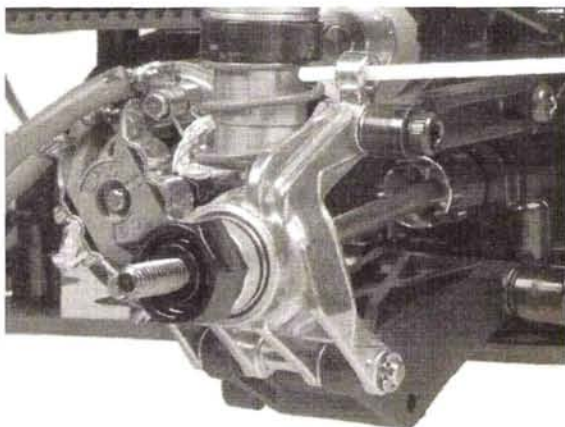
Above: Tamiya's low friction dampers are things of beauty. This shot also highlights the "delta-box" arm design.

Left: the cast gear cover helps to dissipate heat and looks trick. It also adds some extra stiffness to the gearbox.



The TRF is very easy to control on parking-lot tracks and has lots of steering to get you through the tight spots (I even dialed out some throw). Going down the straights at high speed, I experienced none of the tail-wagging instability or other marginal control characteristics demonstrated by lesser sedans when equipped with this much spit. I tried two very different body shells—an Opel Calibra and a Mercedes CLK—and each had different but satisfactory handling characteristics. The Mercedes steered more, while the Calibra seemed a tad less tail-happy when burning tires out of a tight turn. This ability to deal with a variety of aerodynamic influences without getting rattled is the hallmark of a competent chassis design. I've also found Protoform's Nissan Primera to work well. I sent mine to *R/C Boat Modeler* editor Bob Hastings for some paint. Keep in mind, the Primera is not legal for TCS racing. I found it hard to believe that the yellow shock oil included with the kit worked best for me, yet experimentation with heavier fluids caused the car to become skittish and difficult to control. I liked the way the blue springs and yellow sway-

These cast hub carriers look trick and are much stiffer than the plastic stockers. Note the way the carrier's "fingers" wrap around the suspension arm.



- Includes more than two dozen worthwhile competition hop-ups.
- Competent handler right out of the box.
- Easy to tune.



likes

- Too much slop in steering linkage.
- A little heavy.
- Included quick-release battery tray accepts only stick packs.



dislikes

bars prevented excessive body roll without making the car spin out under acceleration, but I also intend to experiment with heavier bars and a ball diff or gear diff in the front gearbox to see what effect that might have on handling.

This was my first exposure to Hitec's new HFX speed control, and although it got a little warm while coping with the amp-sucking capability of my Trinity* 11-triple, it did an excellent job of parceling out the voltage as directed. The DCX receiver and ESC were paired with one of Hitec's 525MG metal-gear servos, hence the red Kimbrough no. 131 servo-saver (Kimbrough's servo-savers and horns are color-coded; parts with the correct 24-tooth spline pattern for Hitec are red). The kit comes with a very nice high-torque servo-saver, but unfortunately, neither of the included adapters will fit Hitec servos.

THE VERDICT

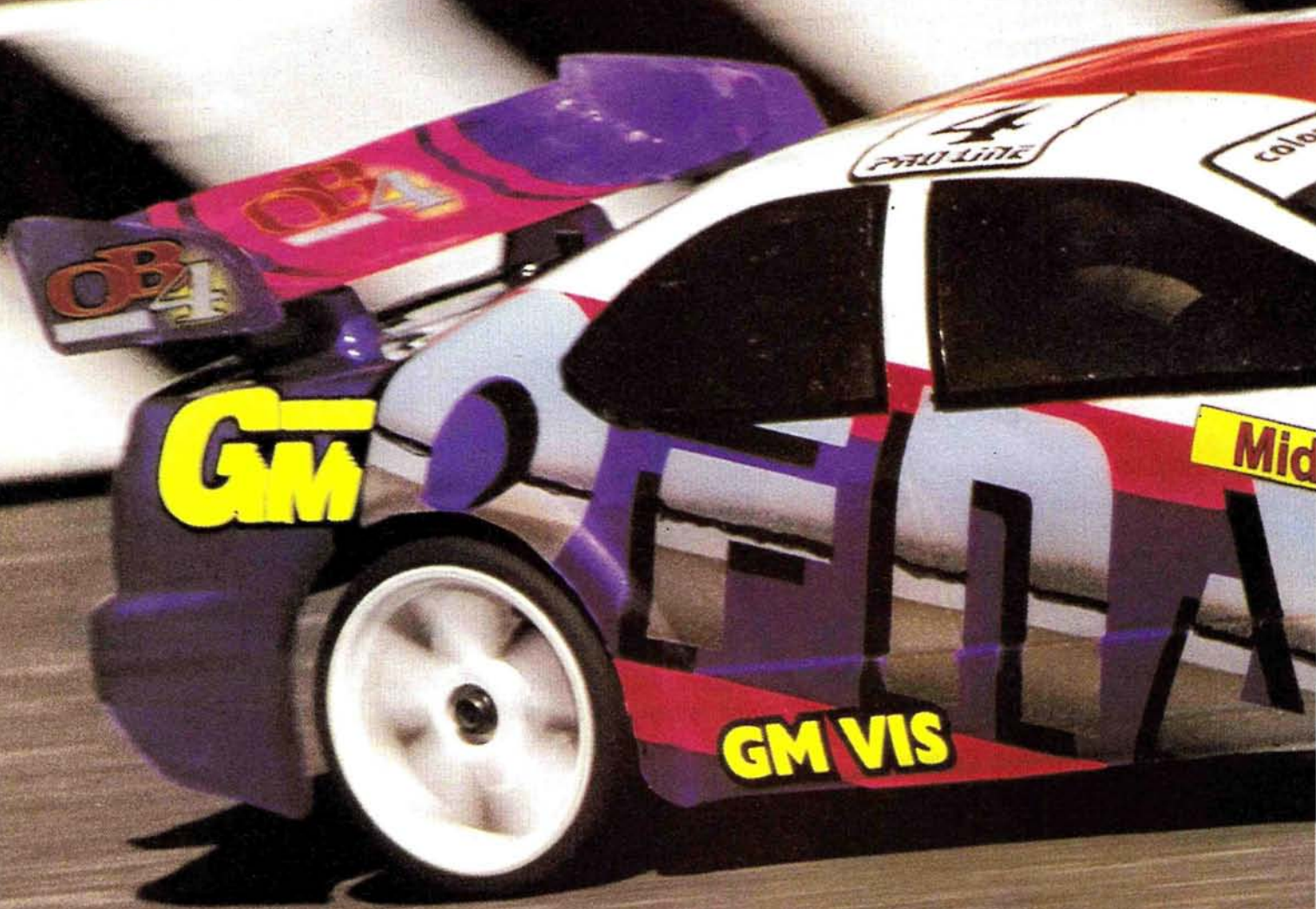
At over 54 ounces, the TRF is a little porky when compared with the competition, but I think you'll find that a substantial amount of this disadvantage is overcome by power-train efficiency and good handling. While an enterprising tuner might be able to pare off some weight by using plastic shock bodies or smaller and lighter electronics, this weight penalty is a small price to pay for such stellar handling. Overall, I'd say that Tamiya has put together a package that's capable of performing at the highest levels of competition.

*Addresses are listed alphabetically in the Index of Manufacturers on page 209. ■



OFNA Racing OB-4 Pro

by Peter Vieira



Although the roots of the touring-car scene are firmly anchored in shaft-driven designs (Tamiya's TA01 and 02, to be specific), dual belts have become the standard drive-train design for touring cars. Yokomo, HPI, Kawada, Tech, Schumacher and OFNA's own Z-10 have all demonstrated the advantages of a pair of belts and a rear-mounted motor. But lately, there seems to have been a resurgence of sedan driveline innovation, as evidenced by the world championship success of Team Losi's 3-belt Street Weapon and Associated's reinvention of the shaft-drive concept in the TC3. New belt layouts appeared on Japanese "boutique" cars as well, most notably on the OVA Cocoon, which OFNA* emulates with its new car (and the subject of this "Thrash Test")—the OB-4. Although still a 2-belter like OFNA's popular Z-10, the "Obee" shakes up the standard. Dubbed "mid-drive," the OB-4 places the motor ahead of a saddle-pack battery carried fully aft, and true to the mid-drive concept, the motor is almost precisely centered between the axles. Does this help handling, or is it just a "Lookit-me-I'm-different" marketing ploy? The track never lies.

MIDDLE MAN



s p e c s

SCALE 1/10
STREET PRICE \$249

DIMENSIONS
Wheelbase 10 in. (255.3mm)
Width (F/R) 7.3 in. (186.5mm)

WEIGHT
Gross, RTR 47.5 oz. (1,346g)

CHASSIS
Type Double-deck plate
Material Graphite

DRIVE TRAIN
Type Dual belt
Primary Pinion/spur
Driveshafts (F/R) CVA universal/dogbone
Differential(s) Ball w/Delrin outdrives
Bearings/bushings Sealed bearings

SUSPENSION (F/R)
Type Upper and lower A-arm/
A-arm and upper link
Damping Coil-over oil shocks

WHEELS
Type One-piece plastic
Dimensions (DxW) 2x1 in.

TIRES
Type Treaded w/foam insert

ELECTRICS
(Not included)

KIT FEATURES

• **CHASSIS.** Worthy of its "Pro" designation, the OB-4 is built around a graphite double-deck chassis. A large cutout in the center of the chassis allows the motor to sit low, although most appropriate mod-motor gear ratios call for the motor to mount above the chassis. Six battery slots in saddle configuration are cut into the rear quarters. Plastic front and rear bulkheads are sandwiched between the chassis plates, but it is the arched center bulkhead that dominates the OB-4 and gives it its distinctive look. Notably, the upper deck is actually two pieces: a front span bridges the center and front bulkheads, and a rear span joins the center and rear bulkheads. Hook-and-loop straps attached to the chassis with molded rungs secure a saddle-pack battery.

• **SUSPENSION.** Don't look for conventional front hub carriers or kingpins; pivot balls provide suspension and steering articulation. This, combined with upper and lower A-arms, allows camber to be adjusted with an Allen key (with the wheels on!). Caster can be adjusted with equal ease by changing positions of snap-on spacers on the upper arms' hinge pins; 5, 7.5 or 10 degrees of caster can be dialed in. Aluminum retainers threaded into the steering knuckles capture the oversize pivot balls. A plastic pad is snapped into the retainer before it is installed to prevent the aluminum retainers from being galled, and the completed setup is easily adjusted for minimum friction without creating slop or play in the parts. The rear suspension also features pivot-ball hubs that allow simple toe changes, but it relies on a conventional turnbuckle link to facilitate camber adjustments. An added benefit of the pivot-type suspension is that track can be adjusted—if only by a few millimeters—by threading the pivot balls into or out of the arms.

OFNA supplies new, shorter dampers to put the "suspend" in the OB-4's suspension. The hard-anodized aluminum-body shocks feature volume-compensating bladders and bottom-loaded, double O-ring seals. Purple aluminum top caps add some color, and the included stiff springs feel up to hardcore sedan work. Unfortunately, the shocks do not operate as smoothly as they should because of machine marks in the piston bores; instead of the silky feel you would expect, there's a "zeep-zeep" sound as the piston slides over the tiny grooves in the shock body. They should work just fine, as the shocks do not bind or have tight spots, but the not-smooth action mars the otherwise excellent suspension system. On the bright side, the shocks are hung off a pair of good-looking graphite shock towers.

Swaybars are also part of the OB-4 Pro package. The rear unit is a conventional wire yoke type actuated by plastic, non-

adjustable links. The front swaybar is an articulated two-piece type and features an interesting cam system that allows it to be adjusted precisely for equal left and right suspension loading.

• **DRIVE TRAIN.** There's nothing unusual about a 2-belt drive system in a touring car, but the Obee arranges the parts differently from other designs. The motor is centered between the axles, and the layshaft is directly overhead. Equal-length drive belts are spun by plastic pulleys and reach out to front and rear ball diffs that feature lightweight Delrin outdrives. The front end is equipped with "CVA" universals, while dogbones outfit the rear. Three spur gears are supplied (78-, 82-, 85-tooth) for installation on the plastic layshaft hub (OFNA offers an aluminum unit as a hop-up). The hub is drilled for "2 hole" mounting, but four holes are provided—two for standard gears and two for metric. A 25-tooth (T) pinion gear is also included.

Combined with the OB-4's 15T layshaft pulleys and 35T diff pulleys, the suggested 85/25 gearing delivers a final drive ratio of 7.82:1. There is no means of adjusting front belt tension, but the rear bulkheads use an indexed cam to adjust rear belt tension by subtly repositioning the rear diff.

• **STEERING.** Basic touring-car stuff here: bellcranks with an adjustable servo-saver and steel turnbuckles point the front wheels. A wire drag link joins the left and right bellcranks via Z-bends, but there's room for a threaded link with ball cups, which I plan to install. Let's hope that OFNA and the other companies that still cling to wire links will get away from Stone Age, Z-bend "technology."

• **BODY, WHEELS AND TIRES.** Most Pro kits don't include a body, but the OB-4 Pro has an Andy's* Stratus shell inside the box. Most racers choose a Stratus body anyway, so, way to go, OFNA. The split-spoke wheels are basic, and the tires are strictly for play; they're relatively hard with tall sidewalls. Strip-type inserts are included.

- Innovative design that works.
- Easy to adjust and tune.
- Easiest-to-build OFNA yet.
- Includes popular Andy's Stratus body.



Likes

- Motor is mounted higher than necessary.
- Shocks are not as smooth as they could (and should) be.
- Plastic spur-gear hub; aluminum is preferable.



dislikes





TEST GEAR

- GM Racing V-12 ESC • GM Racing EVO-3 12x2 modified motor
- GM Racing PEP matched pack • Airtronics* 94257 servo • Yokomo medium-compound Sprint tires and Inch-Up rims with Yokomo soft (rear) and medium (front) inserts

PERFORMANCE

Although I didn't expect much from the OB-4's included tires, I glued them up just to see how the car would handle in true, out-of-the-box trim. The GM EVO-3 motor easily lit up all four wheels, even though the car was way overgeared with the stock pinion and spur (it sure was fast, though).

I didn't feel like walking back to the bench to regear the car, however, so I decided to give the GM V-12 ESC a workout and kept on driving. The OB-4 pushed hard at speed, and under heavy braking, there was virtually no steering. The tires just didn't have the grip to steer the car at speed or to maintain traction when the brakes were pounded. At less than warp speeds, however, the OB-4 was very drivable, even with the kit rubber. The understeer made it hard to exploit the squirt of the GM motor when blasting out of turns, but the car still made it around the boards in a hurry. I knew that better tires would help immensely, so I rounded up some racing rubber for the next battery pack. Yokomo* Sprints mounted on Inch-Up wheels found a home on the Obee's axles: medium-compound rubber front and rear, with soft Yokomo inserts in the back tires and medium inserts up front. I also regear the car to let the ESC breathe more easily, extend run time and give the car more punch. Even with cold tires, the OB-4 felt like an entirely new machine. The push was replaced with a very mellow oversteer that made it easy to find the fast way through the turns. The car had that nicely glued feel whenever I accelerated hard, yet it still carried a lot of speed through the turns.

Out of curiosity, I disabled the front and rear swaybars to see how the handling would change. The car didn't stick as well, but it was still very tractable. Cornering was a matter of pitching it

sideways and adjusting the radius of the turn with the throttle—murder on tires and not very efficient but, boy, is it fun! My little experiment further cemented the good feelings I had about the Obee; even when it was driven hard with

BUILDING & SETUP TIPS

I haven't built a lot of OFNA cars, but the OB-4 Pro is certainly the easiest OFNA vehicle I have assembled. The instructions lack the polish of some of the computer-illustrated manuals, but they are clear and largely glitch-free. Here are some steps to watch out for and a few tips I found helpful.

■ Step 1: shock assembly. The OB-4's aluminum shock bodies use external plastic caps to hold in the seals. A small notch molded into each cap is meant to allow the cap to be stretched over a lip in the shock body, but I found the caps nearly impossible to snap on. To remedy this, I made a small cut in the bottom of the notch to allow the caps to flex more; they snapped on with moderate pressure and have stayed put since.

■ Step 4: differential assembly. The OB-4's diffs are not much different from those of other tourers, with the exception of the thrust-bearing assembly. Instead of using a spring or stack of Belleville washers to load the bearing, a split washer is used; however, the included 2.6x6mm diff through-bolts are too short to thread into the left diff halves with the washer in place. The diffs will work without the washers, but there is only about 1/8 turn of adjustment between too tight and too loose. OFNA probably has longer bolts in kits now, but forewarned is forearmed.

■ Steps 6, 13: pivot ball installation. The aluminum pivot-ball retainers tend to wander a bit as they are tightened. Thread them in carefully, but don't be too concerned if one just doesn't want to go in perfectly straight; it won't affect the operation of the pivot.

■ Step 8: front arm assembly. The illustration shows the 3x8 ride-height setscrew being installed in the hole meant for the hinge-pin setscrew (installed in step 9). The screw is meant to go into the hole at the rear of the arm alongside the hinge pin.

■ Step 15: rear differential installation. The rear diff uses a cam mount to facilitate belt-tension adjustment—a proven system. The OB-4's diff cams are a loose fit, however, and that can lead to frustration if they slip out of position as you try to install the rear-diff assembly. A little rubber cement will help hold the pieces in place while you build. Once assembled (with or without cement), the cams can't budge. By the way, use position "10" instead of the suggested "11" setting, which makes the belt a little too tight.

■ Steps 16, 27: turnbuckle assembly. The supplied steel turnbuckles do not have very sharp threads and are difficult to start in the rod ends. I found it helped to get a thread started with a screw. Any screw will do; just start a thread with one or two turns, then back it out.

■ Step 20: rear dogbone installation. As assembled "by the book," the OB-4's bones can wander back and forth in the drive cups—no biggie with steel diff outdrives, but the Obee's Delrin outdrives are likely to flex if you jump on the gas with the dogbone ends riding close to the tips of the cups. I installed two O-rings in each of the rear stub axles to push the bones as deeply into the diff outdrives as possible.

■ Step 31: motor installation. The kit gears require the motor to be installed about midway up the vertical mounting slots, and that raises it higher than I prefer. To help lower the motor (and, in turn, lower the car's center of gravity), install the largest pinion-and-spur combination that delivers the ratio you need for your track. I matched the 3.4:1 ratio of the kit's 85/25 gearing with a Robinson Racing Products* 96T Stealth Pro spur and 28T aluminum Pro pinion for a 3.43:1 ratio, but later switched to a 24T pinion to better cope with the GM Racing* 12x2 EVO-3 test motor.

such a loose setup, it took some real ham-fisted driving to get it to totally lose it and slide off the track. I don't like to hand out "raves," but I gotta hand it to OFNA: this car feels ready for the A-main straight from the box—kit setup and all (minus the tires, but no racer runs stock rubber, right?).

Not that the OB-4 is without flaws. The front end is a bit frag-

YOU'LL NEED

- 2-channel radio.
- Steering servo.
- Electronic speed control.
- 6-cell, saddle-type battery.
- Charger.
- CA glue.
- Polycarbonate-compatible paint.

FACTORY OPTIONS

- Front one-way pulley—part no. 37901.
- Machined-aluminum motor mount—39305.
- Machined-aluminum heat-sink posts—39306.
- Aluminum swaybar mount—39307.
- Aluminum motor heat sink—39309.
- Rear belt tensioner—39308.
- CVA upgrade dogbone—39312.
- Clear Lexan shocks (pair)—39040.
- Machined-aluminum spur-gear mount—39013.

ile; because the inboard hinge pins are not tied together by a brace, and the front bulkhead is installed as a left half and a right half, it's easy to knock an arm back a few degrees if the car snags a board. When I tapped a PVC pipe at moderate speed, the front universals proved to be a bit soft and an axle bowed (harder axles are offered as an option). You'll also want to keep an eye on the bellcranks; it doesn't take long for the wire, Z-bend drag link to get sloppy. The hub carriers also get a little sloppy as the parts seat themselves, so be sure to check them often during your first runs with the car. Any play in the parts is easily dialed out with a twist of the pivot ball retainers. It's also a good idea to recheck the camber and toe settings whenever you adjust the retainers, although the settings should not change much. Overall, the car should be as durable as comparable sedans. The Delrin diffs surprised me with their strength. I pounded on the car pretty aggressively, and the outdrives didn't whimper.

THE VERDICT

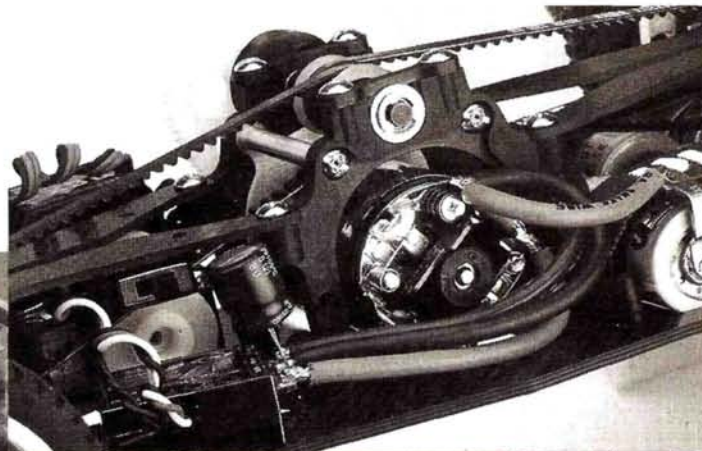
I think the OB-4 Pro is OFNA's best touring car—hands down. It's very easy to adjust (and there are plenty of adjustments), it doesn't require any special skill to build, and it handles very well. It's also a good value when you consider the kit's features and the included body. All you need to add is the right set of treads for your track, and the OB-4 will go as fast as you want it to go.

**Addresses are listed alphabetically in the Index of Manufacturers on page 209.*

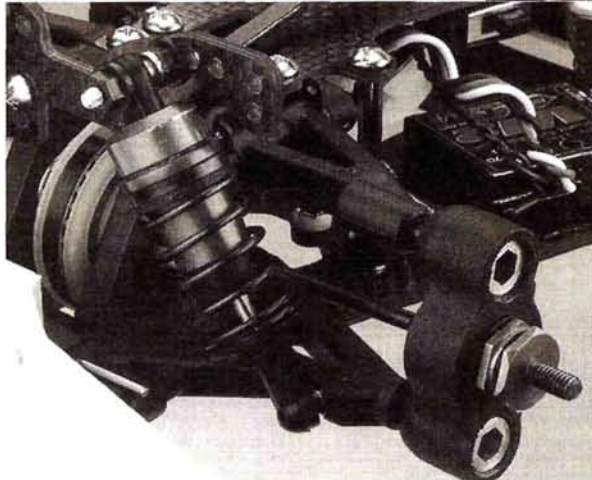
Right: the OB-4's curvaceous central motor mount/bulkhead gives the car a Byzantine look. The aluminum motor plate that is pressed into the right bulkhead is just visible. Note also the easily removed caps that hold the layshaft in place.



Above: new, short dampers with stiff springs help tighten up the OB-4's handling.



Above: the Delrin diffs held up well, included turnbuckles make adjustments easy, and the rear hubs are obviously rugged. There's nothing to prevent the swaybar from popping out of its plastic locating links, but no problems were encountered. Left: blue aluminum hex hubs are standard equipment (too bad this is a black and white photo).



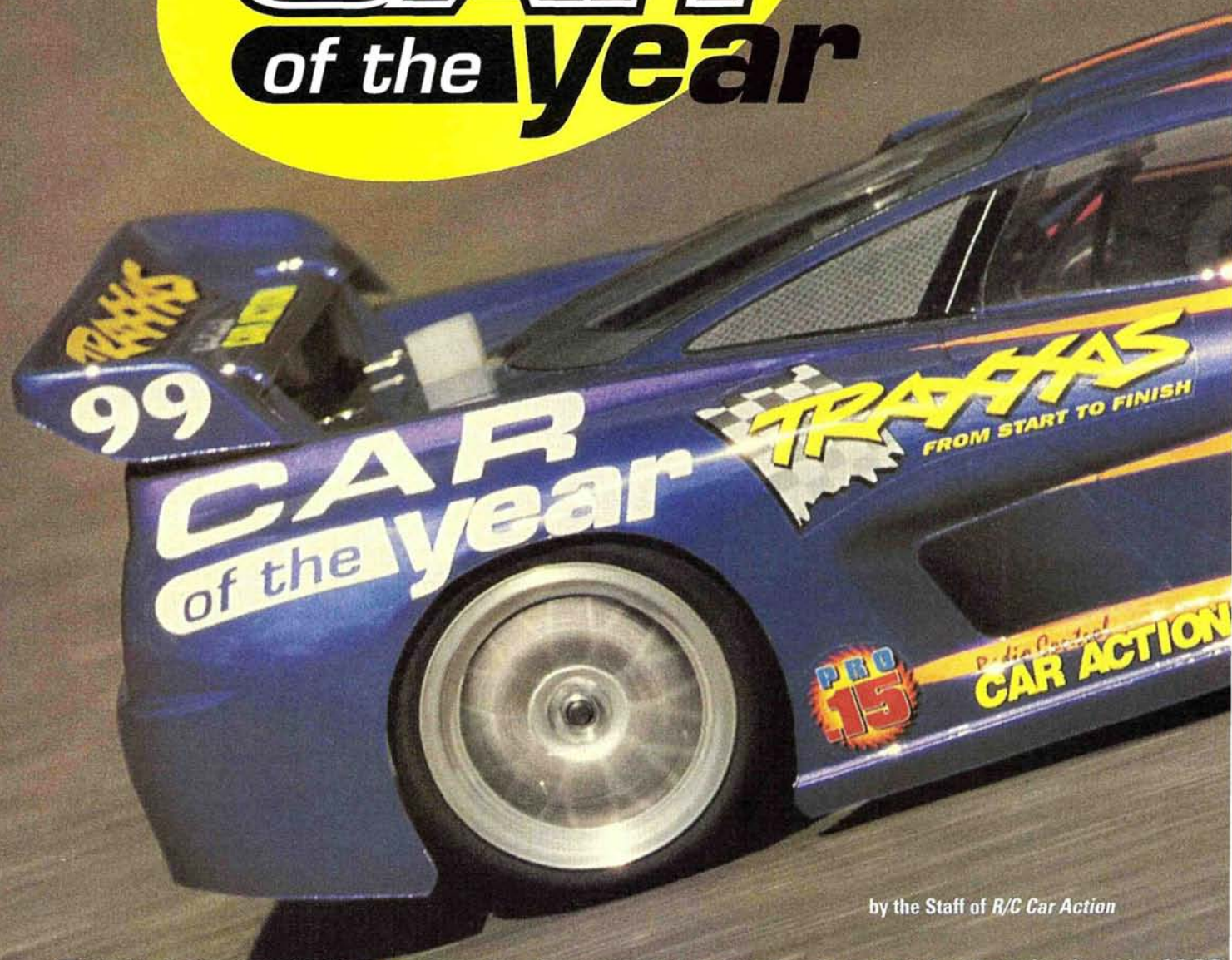
THE COMPETITION

	TEAM LOSI STREET WEAPON	KYOSHO TF-3 TYPE R	HPI RS4 PRO 2	SCHUMACHER SST PRO '99	OFNA RACING OB-4 PRO	CORALLY C4
Wheelbase	10.19 in. (259mm)	10.1 in. (257mm)	9.88 in. (251mm)	10 in. (254mm)	10 in. (255.3mm)	9.8 in. (249mm)
Width (F/R)	7.25 in. (184mm)	7.5 in. (191mm)	7.2/7.4 in. (183/188mm)	7.25 in. (184mm)	7.3 in. (186.5mm)	7.32/7.38 in. (186/188mm)
Diff type	Ball	Ball	Ball	Ball	Ball	Ball
Chassis	Composite	Graphite	Graphite	Fiberglass	Graphite	Graphite
List price	\$349.95	\$399.99	\$399	\$369	\$389	NA
Available at**	\$225	\$290	\$219	\$225	\$249	NA
Reviewed in	12/97	2/99	5/99	4/99	10/99	8/99

Partial list only; product category is too large to list all competitive vehicles

**Prices vary with location

RADIO CONTROL
car action
CAR
of the year



by the Staff of R/C Car Action

It's that time again: time to consider the cars that most impressed and entertained us in 1999, and to name just one as the R/C Car Action "Car of the Year." It's not easy because there are a lot of cars to consider. It seems as though a new touring car is released every week, and nitro-powered cars surged in 1999. To determine which cars had the right stuff, we first had to decide what it takes to be Car of the Year. Is it impressive performance? The potential to bring newcomers to the

hobby? Value? In the end, we chose a car that well represents those three facets in a well-thought-out kit. Introducing the 1999 R/C Car

Action Car of the Year:
the Traxxas Nitro 4 Tec.

Traxxas
Nitro 4 Tec



SPECIFICATIONS

SCALE 1/10
LIST PRICE \$359.99 (\$299.99 w/out radio)

DIMENSIONS
Wheelbase 10.2 in. (259mm)
Width 7.8 in. (198mm)

WEIGHT
Gross, RTR 63 oz. (1,786g)

CHASSIS
Type Double-deck plate
Material Aluminum lower plate and molded upper deck

DRIVE TRAIN
Type 3-belt 4WD
Primary 2-speed clutch bell/ 2-speed spur-gear cluster
Drive shafts Telescoping universal
Differentials Planetary gear
Clutch Centrifugal 2-shoe
Bearings/bushings Bearings

SUSPENSION (F/R)
Type Upper and lower suspension arms/lower suspension arm adjustable upper link
Damping Molded, oil-filled, coil-over shocks

WHEELS
Type Molded one-piece aluminum finish

TIRES
Type Pro-Line V-Rage (S2 compound)

POWERPLANT
Engine Traxxas Pro 15
Carb Rotary w/high-speed and low-speed air/fuel adjustment
Pipe Molded tuned pipe

RADIO GEAR
Transmitter Traxxas Qualifier 2-channel AM
Servos Traxxas 2018

WHICH MADE THE CUT?

The rules we used to determine which cars qualified for consideration as the 1999 R/C Car Action "Car of the Year" were simple:

1. Only vehicles sold through normal distribution channels in the United States and available on dealer shelves or by mail order before June 30, 1999, were considered. Kits available after that date will be eligible to be chosen as our "2000 Car of the Year."

2. All R/C vehicles that are available with a "car" body (buggy, F1, touring car, GTP) were eligible for consideration, regardless of scale, class, or type of power (nitro or electric).



2-SPEED TRANNY. The Nitro 4 Tec's 2-speed transmission contributes to its impressive top speed; this is an expensive option on many other cars. The tranny's unique locking mechanism prevents the shift-point-adjustment screw from loosening, so the shift point stays as you set it until you decide to readjust it. An optional, race-oriented gear set is available to give the Nitro 4 Tec lower, more conservative gearing that will allow it to reach top speed in a much shorter distance—perfect for racing on tight roadcourses.

BELT DRIVE TRAIN. Three drive belts transfer the power to the front and rear planetary gear differentials, and a complete set of stainless-steel ball bearings ensures smooth power transfer. The long, externally mounted center drive belt meshes with large, oversize pulleys that also help to reduce friction. Final drive is accomplished by plastic telescoping universal drive shafts, and the wheels spin on nothing less than ball bearings.

COUNTERSUNK CHASSIS. The 2.6mm-thick, blue-anodized 6061-T6-aluminum chassis has raised sides that increase its rigidity. The screw holes are all countersunk, and the engine-mount holes are recessed and slotted so that the included flat-head engine-mounting screws will not protrude from the bottom of the chassis. Molded chassis braces on both sides of the fuel tank, engine and engine mounts are combined with the molded upper deck and rear chassis brace to form an ultra-rigid foundation.

CENTERED FUEL TANK. Because its fuel tank is in the center of the chassis, the car's handling characteristics will not change as the fuel is consumed and the car becomes lighter. The fuel tank features a handy priming bulb, and a two-piece rubber gasket helps to prevent the fuel from foaming.

FULLY ADJUSTABLE FRONT SUSPENSION. The 4 Tec comes with a completely adjustable pivot-ball front suspension. Caster, camber and toe-in/out are all adjustable, and the included tie rods make the task much easier. Two lower arm mounts are included (0 and 3 degrees), and reactive caster wedges that slide under the upper arm mounts add dive or anti-dive characteristics to the front suspension. Plastic-body, oil-filled, coil-over Big-Bore shocks provide the damping, and interchangeable pistons and clip-on preload spacers allow additional tuning capabilities.

REAR SUSPENSION. Lower suspension arms with tweak adjustment screws and turnbuckle upper links hold the rear axle carriers in place. To allow camber-rise adjustment, several camber-link mounting choices are provided on the rear axle carriers and rear bulkhead. The Nitro 4 Tec comes equipped with 1.5-degree rear axle carriers that provide a total of 3 degrees rear toe-in. Zero-degree rear axle carriers are listed on the Nitro 4 Tec's "optional parts" list.

TRX POWER. Traxxas' very own TRX Pro 15 engine provides serious go-power. The engine's large, blue-anodized, machined-aluminum heat-sink head keeps engine temperatures in check, while a Big-Bore rotary carb with both high- and low-end mixture adjustments allows the engine to be tuned for maximum performance as well as maximum cooling. The engine also features a ball-bearing-supported crankshaft with a bronze-bushed aluminum connecting rod and a wet-type air filter.

EZ-START SYSTEM. Racers may not like the idea of a built-in starting system mounted on the chassis because it adds considerable weight, but the Nitro 4 Tec's target audience of entry-level nitro enthusiasts will certainly appreciate its convenience. The EZ-Start system consists of a small, electric motor that's mounted on a gear-reduction unit (transmission) and a jumper cable that ignites the glow plug when the engine is started. Just plug in the hand-held starter unit, which is simply a black box with a single red button and LED that's strapped to a 7.2V battery pack (not included), press the button, and the engine cranks to life just like a full-scale car's engine does; too bad Traxxas doesn't provide car keys.

COMPOSITE TUNED PIPE. The Nitro 4 Tec's high-performance tuned exhaust system consists of a cast-aluminum exhaust manifold and composite tuned pipe. The tuned exhaust system is less restrictive than the model airplane-type canister mufflers that are included with many sport-level kits, and this allows the Pro 15 engine to operate cooler and to develop more power. Without doubt, the tuned exhaust system contributes to the Nitro 4 Tec's excellent performance and rock-solid reliability.

HIGH-PERFORMANCE WHEELS AND TIRES. The extremely trick 2-inch simulated-aluminum mesh wheels accept 1.9-inch touring-car tires and provide a lower sidewall and larger contact patch by slightly stretching the tire. Pro-Line V-Rage tires (molded in the company's S2 compound) and foam tire inserts are also provided.

THE FAMILY TREE

4 Tec—electric

Front and rear ball diffs, double-deck chassis, efficient dual-belt drive train, oil-filled shocks, bearing-supported top shaft, 2-inch wheels with Pro-Line V-Rage tires and a highly adjustable suspension are only a few of the 4 Tec's features. It's available RTR with Traxxas' very own TQ radio system installed on the chassis and as an unassembled kit that includes a surprisingly fast 20-turn modified motor and 3-step forward and reverse rotary-type mechanical speed control. In either form, the 4 Tec boasts features usually reserved for more racing-oriented TC kits, yet it is among the most affordable cars in its class. Many available factory options, such as a double-deck graphite chassis and hard-anodized Teflon-coated shocks, take the 4 Tec to the next level of performance.



Nitro 4 Tec Pro

Take a regular Nitro 4 Tec and install just about every available optional factory part on it, and you'll essentially end up with a Nitro 4 Tec Pro. The "Pro's" graphite upper deck, rear chassis brace, rear shock tower and front hinge-pin brace make the car lighter and more rigid, while providing an all-business profile. A full set of sealed ball bearings, upgraded Pro front and rear ball diffs, hard-anodized aluminum shocks, titanium tie rods and hinge pins, 2-speed tranny, front and rear swaybars, aluminum pulley shaft and a graphite disk brake are

also part of the package. The Pro kit is available unassembled only and does not include an engine. The kit does, however, include a blue-anodized header (which will accommodate both pull- and non-pull-start .12- and .15-size side exhaust engines), a lightweight flywheel, 2-speed clutch bell and all the necessary fuel line and throttle and brake linkages.

WHY IT WON

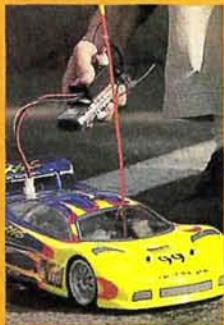
The Traxxas Nitro 4 Tec has been a sales leader since its introduction late in 1998. This was verified by a few phone calls to some of the largest hobby distributors, mail-order companies and hobby chains. They all agreed that it is nearly impossible to keep in stock. According to Traxxas, the Nitro 4 Tec is its best-selling kit and has broken every single company sales record.

The car's popularity shouldn't come as a surprise, though; when it comes down to "brass-tacks" raw speed, the Nitro 4 Tec delivers; in fact, some claim that it's actually over-powered—as if there is such a thing! The factory-installed TRX Pro 15 engine, composite tuned pipe and 2-speed transmission with tall gearing all contribute to the amazing 50mph top speed that makes the Nitro 4 Tec the fastest RTR vehicle we tested.

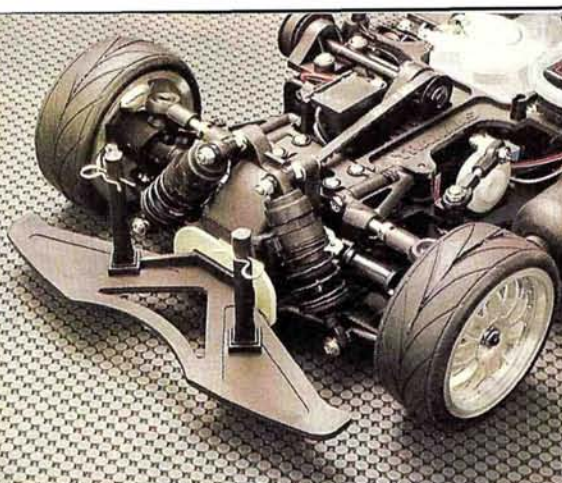
On the track, the Nitro 4 Tec is no slouch, and its completely adjustable suspension allows it to be tuned to work well on all track surfaces. The Nitro 4 Tec has many tuning adjustments that are simply not available on other cars in the same price range, and a huge list of factory hop-up parts makes the Nitro 4 Tec a good foundation to build on. Traxxas also has one of the largest dealer networks in the industry, so replacement parts are easy to find. And if you ever need customer service, Traxxas has one of the best customer-support departments going.

In sum, the Nitro 4 Tec is a popular, fast and fun car at a fair price. That combination can only help to bring more hobbyists into the world of nitro power specifically and the R/C car

hobby in general. And *that's* what makes the Nitro 4 Tec R/C Car Action's 1999 Car of the Year. ■

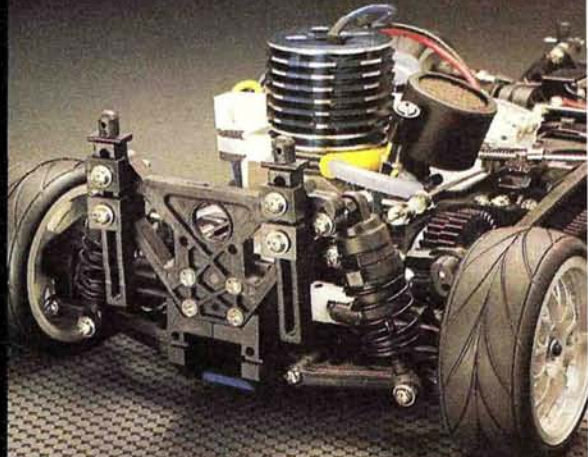


How sweet it is! Push one button, and the engine roars to life. We love it!



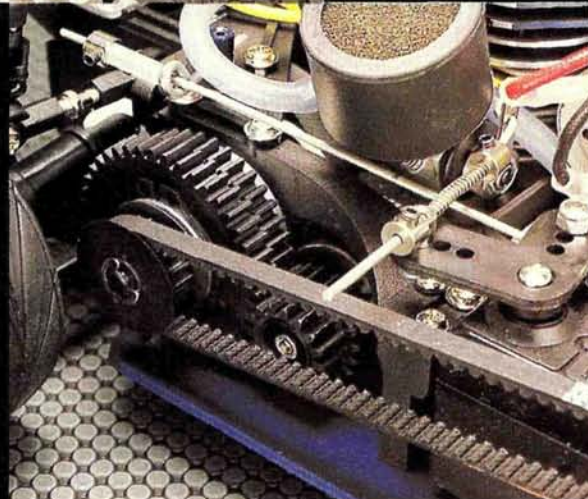
Oil-filled shocks, telescoping universal sliders and Pro-Line V-Rage tires are all standard on the Nitro 4 Tec. Check out the upper suspension arms that allow cast-er adjustment and the fiberglass hinge-pin brace—pretty trick stuff! The car comes equipped with one of the strongest bumpers to grace a touring car.

Adjustable body mounts make installing Lexan bodies a snap, and you don't have to buy new mounts every time you change bodies. The rear suspension arms' tweak screws allow the tuner to adjust the car's static tweak. Adjustable swaybar mounts are included, and front and rear swaybars are optional.



The TRX Pro 15 engine is a screamer! The tall heat-sink head keeps the engine cool, and it looks good, too. An aluminum manifold and composite tuned pipe allow the engine to operate with greater efficiency and performance. The EZ-Start system makes starting the little power mill a blast. Traxxas should include car keys with this vehicle!

No need to pick up a 2-speed tranny (probably the most popular hop-up on any nitro touring car) because Traxxas includes a really good one. Optional spur gear and clutch-bell clusters that allow gear ratio changes are available from the factory.





Since the 1989 IFMAR Off-Road World Championships, we've come to expect new products and prototypes that represent the ultimate in performance technology at this event. After all, it makes sense for manufacturers to take their strongest players to this most prestigious race.

Team Losi's* new Triple-X buggy represents some of the new technology that we can expect to see competing at this year's IFMAR World Championship. On its first outing (ROAR Mod Nats), nine of the 15 preproduction Triple-Xs run by Team Trinity/Losi drivers made the A-main, and Brian Kinwald went on to win with one.

We are fortunate to be able to bring you this exclusive, in-depth look at this virtually all-new car. Unlike the version of the Triple-X featured in last month's issue, this car more closely represents what we can expect to show up on the hobby-shop shelves this season.

RADIO CONTROL CAR ACTION'S
TOTAL GUIDE TO TEAM



SPECIFICATIONS

SCALE 1/10
LIST PRICE \$349.95

DIMENSIONS (chassis only)
Length overall 14.5 in. (368.3mm)
Wheelbase 10.79 in. (273.9mm)
Width (F/R) 9.66/9.61 in.
 (245.3/244mm)

WEIGHT
Gross, RTR 53.9 oz. (1,529g)

CHASSIS
Type Tub
Material Composite
Front kick-up 30 degrees

DRIVE TRAIN
Type Gearbox
Internal Ratio 2.43:1
Primary Pinion/spur
Drive shafts Universal
Differential(s) Ball
Slipper Double disk
Bearings/bushings Bearings

SUSPENSION (F/R)
Type Lower arm w/adjustable
 upper link
Damping Oil-filled, coil-over
 shocks
Front caster angle 30°
Rear toe angle 3° per side
Rear anti-squat 2°

WHEELS
Type Wide dish/standard
 dish

TIRES
Type Silver rib/silver
 taper pin

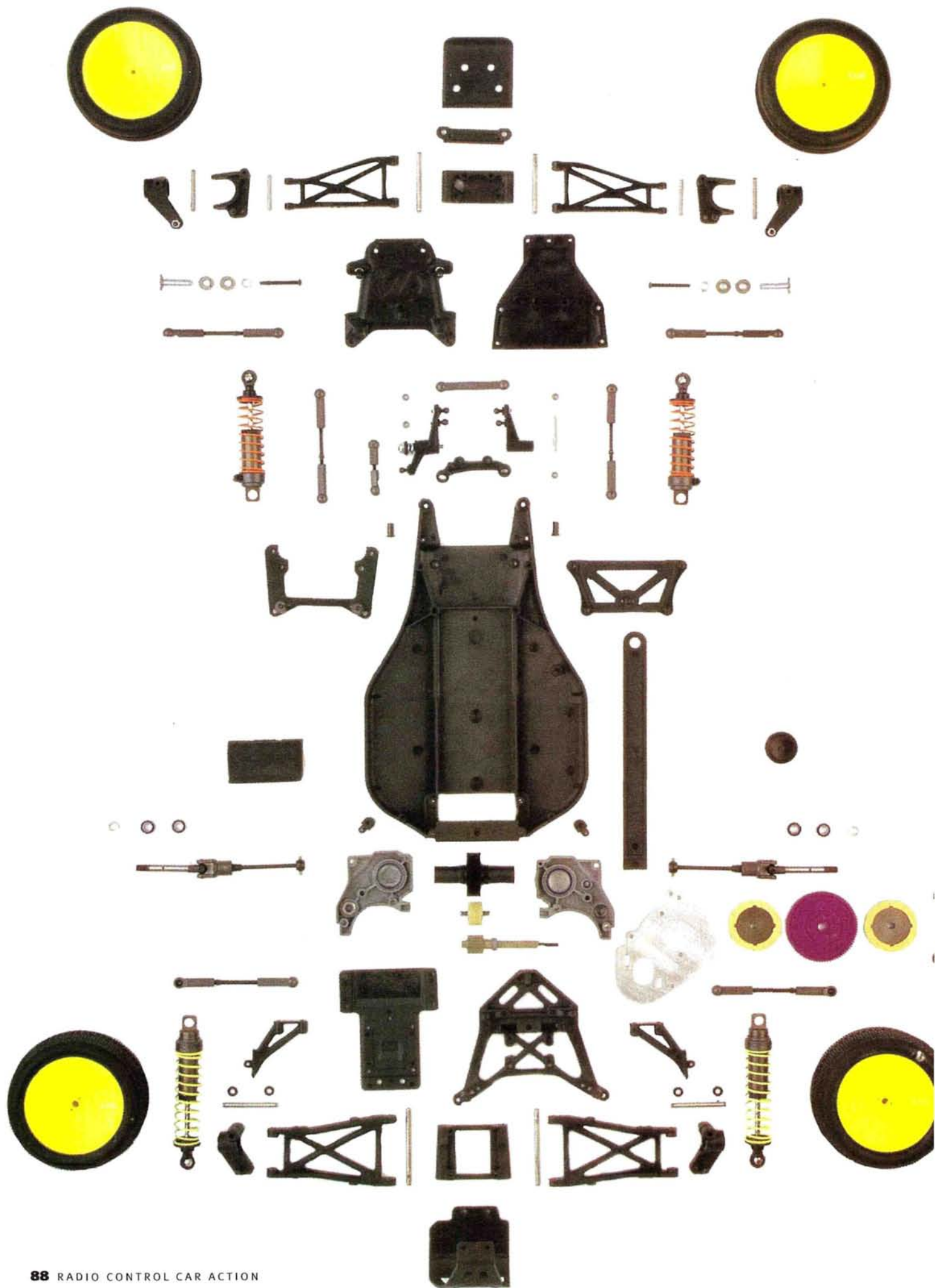
ELECTRICS (not included)
Motor Trinity* D 3.5
Battery Trinity Panasonic 3000
ESC Novak* Cyclone



PHOTOS BY WALTER SIDAS AND STEVE POND

LOSI'S TRIPLEX

BY STEVE POND



X-RATED INSIGHT

I spoke with Gil Losi Jr.—the Triple-X's chief designer—to gain some insight into the car's development. Gil explained that the introduction of this car happens to coincide with the World Champs but that many of its design features combine concepts he and the rest of the team had been developing since shortly after they introduced the Double-X car. In short, Gil explained that their main objective with the new design was to create a more balanced car that's more aggressive in the turns, tracks straighter under heavy acceleration, turns better on flatter surfaces and gets better bite in low-traction situations—all without losing the bumpy-track prowess of the Double-X. No problem—right?!

FRONTAL XPOSURE

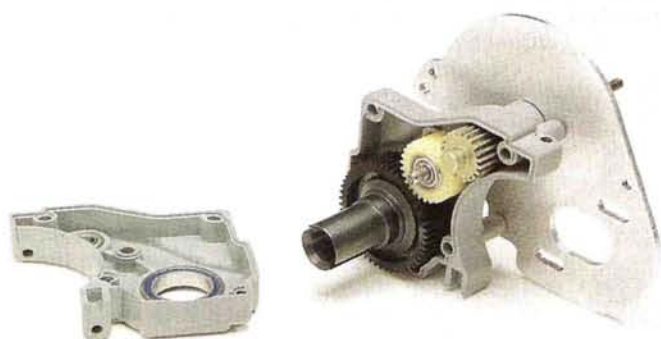
The front end displays the most visible evidence of design innovation. It includes entirely new components, starting with the suspension arms, which are 0.4 inch shorter than those on the Double-X. Over the past 10 years, suspension arms have typically been getting longer, so reverting to shorter arms may initially seem awkward. Gil Jr. assures me, however, that longer isn't always better and that the dimensions of the new arms are

essential to the new design's geometry.

The arms have been kept as long as they can be by narrowing the front of the chassis to shrink the distance between the suspension-arm mounts from 1.8 to 1.5 inches.

The suspension arms are attached to the chassis with a separate suspension-arm mount instead of with the one-piece bulkhead used in the Double-X. The mount is sandwiched between the bumper and the front clip and can easily be removed by unscrewing four screws. It's no longer necessary to remove the upper plate, shock tower, camber links and two very tightly fitting hinge pins just to replace a broken suspension mount. Remove four screws and two E-clips, and you'll install a new suspension mount in less than two minutes!

Despite the use of shorter front suspension arms, the wider, new, front hub carriers allow the car to maintain maximum width. The point on the bottom of the hub carrier at which the suspension arm is attached has a radical inward offset designed in as part of the new geometry. The increased hub-carrier width almost makes up for the 1.1-inch combined loss of wingspan of



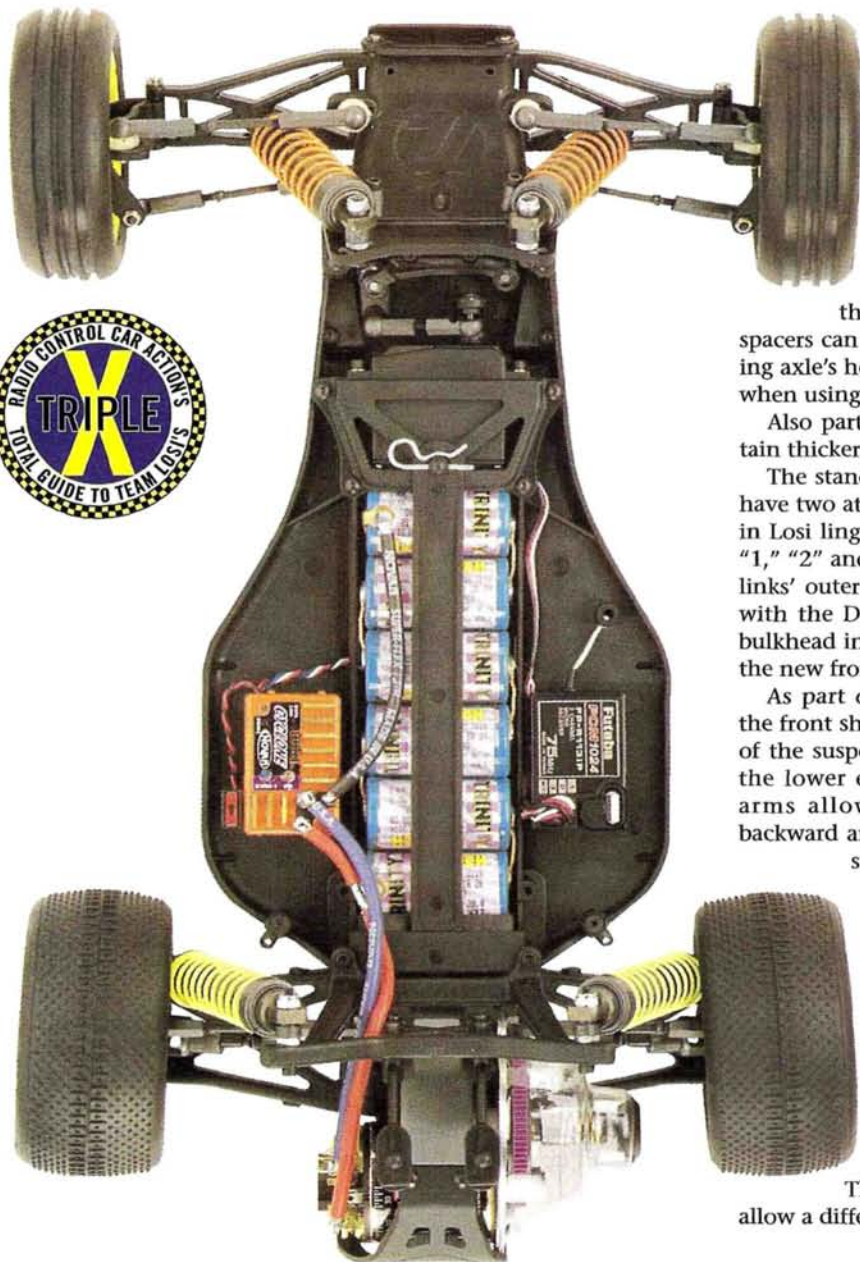
Above: the Triple-X's transmission has a 2.43:1 internal ratio. A 21-tooth top shaft drives a 27-tooth idler, and it, in turn, drives the new 51-tooth diff gear. The top shaft is the same as those used in the older transmission design; it allows the use of existing Hydra-Drive and other miscellaneous tranny accessories.



Above: the new front suspension uses a separate mount for the arms instead of a one-piece bulkhead. The suspension mount is easily replaced in less than two minutes by removing four screws and two E-clips.



Left: notice that the angle of the steering bellcranks matches the angle of kick-up at the front of the chassis. This is designed to maintain ideal bump-steer angles at all times.



the suspension arms. The Triple-X front suspension's overall width is still just a little shy of the older car's, however. This is deliberate, as it allows the use of the popular wide front wheels and tires but keeps the car's width legal under the rules of most of the world's major race-sanctioning organizations—a feat not possible with the wider Double-X.

The Triple-X kits will have spacers on the inside of the floating axles to allow the use of the wide tires. The spacers can also be installed between the steering hub and the floating axle's hex adapters to widen the car to the maximum legal width when using the skinny, standard front meats.

Also part of the design are new, stronger steering hubs that contain thicker ($\frac{3}{16} \times \frac{3}{8}$ -inch), more durable axle bearings.

The standard Triple-X includes steel turnbuckle camber links that have two attaching points on the hub carrier ("A" and "B" positions, in Losi lingo) and three on the front upper bulkhead (referred to as "1," "2" and "3" going from the inside position outward). The upper links' outer mounting positions are more familiar (when compared with the Double-X's), but their insides are mounted on the front bulkhead instead of on the shock tower. This is necessary because of the new front shock location.

As part of an attempt to keep the car's CG as low as possible, the front shocks have been relocated from just behind the front edge of the suspension arms to just ahead of their rear edges. Mounting the lower end of the shocks toward the back of the suspension arms allows the shocks and the shock tower to be moved backward and downward; this keeps the CG low but doesn't reduce suspension travel.

Just behind the front suspension are new steering bellcranks. Similar in function to those on the Double-X, they have an idler arm on one side and a built-in servo-saver/bellcrank on the other. The primary difference is that the new steering assembly is angled at 30 degrees to match the pitch of the chassis kick-up and the front suspension arms. According to Gil Jr., this arrangement allows the Triple-X to maintain the correct amount of bump steer at any steering angle. This makes the car less twitchy when it lands off a jump and when it traverses bumpy sections of the track.

There's an optional pair of steering-link mounting holes to allow a different degree of Ackerman if you need it.

First Impressions

by Greg Vogel



One of the most exciting aspects of working at *Radio Control Car Action* is that I am one of the first people, besides the manufacturers, to see, build, use, or run many new products. Every month is just as exciting as the last because I get the chance to take the wheel of a test car for a photo shoot and testing. Let me tell you, I just couldn't wait to squeeze the trigger that was controlling Losi's all-new Triple-X buggy. After two weeks of shooting and senior editor Steve Pond's hiding the car from me, I had the chance to lay down the power at *R/C Car Action's* favorite test site—R/C Madness in Enfield, CT.

After a quick show and tell with the curious onlookers, I headed to the drivers' stand for the first heat. Without having practiced, I yanked the trigger at the starting tone. The car took off

Just under the steering bellcranks is the chassis nose section, or what I like to call the "front clip." This section is a separate unit—clever! If this part is damaged or broken in a hard, front-end collision, it can be replaced without your having to disturb any of the electronics or the rear suspension.

CURVY MID-SECTION

The Triple-X's center section has much smoother lines than its predecessor's, but its benefits are far beyond cosmetic.

For starters, the big news is that there's no longer any need to cut the ears off your expensive steering servo to install it properly. Some differences in dimensions also make the chassis more user-friendly when it's time to install the rest of the electronics.

The front section of the Triple-X's chassis is a little more slender than the Double-X's, but the rear section, which holds the electronics, is more than 1/2 inch wider. The channels in which the receiver and speed control are installed have been widened from 1.2 to 1.66 inches to accept more of the middle-line speed controls and receivers that tend to be larger in size than the expensive top-of-the-line equipment.

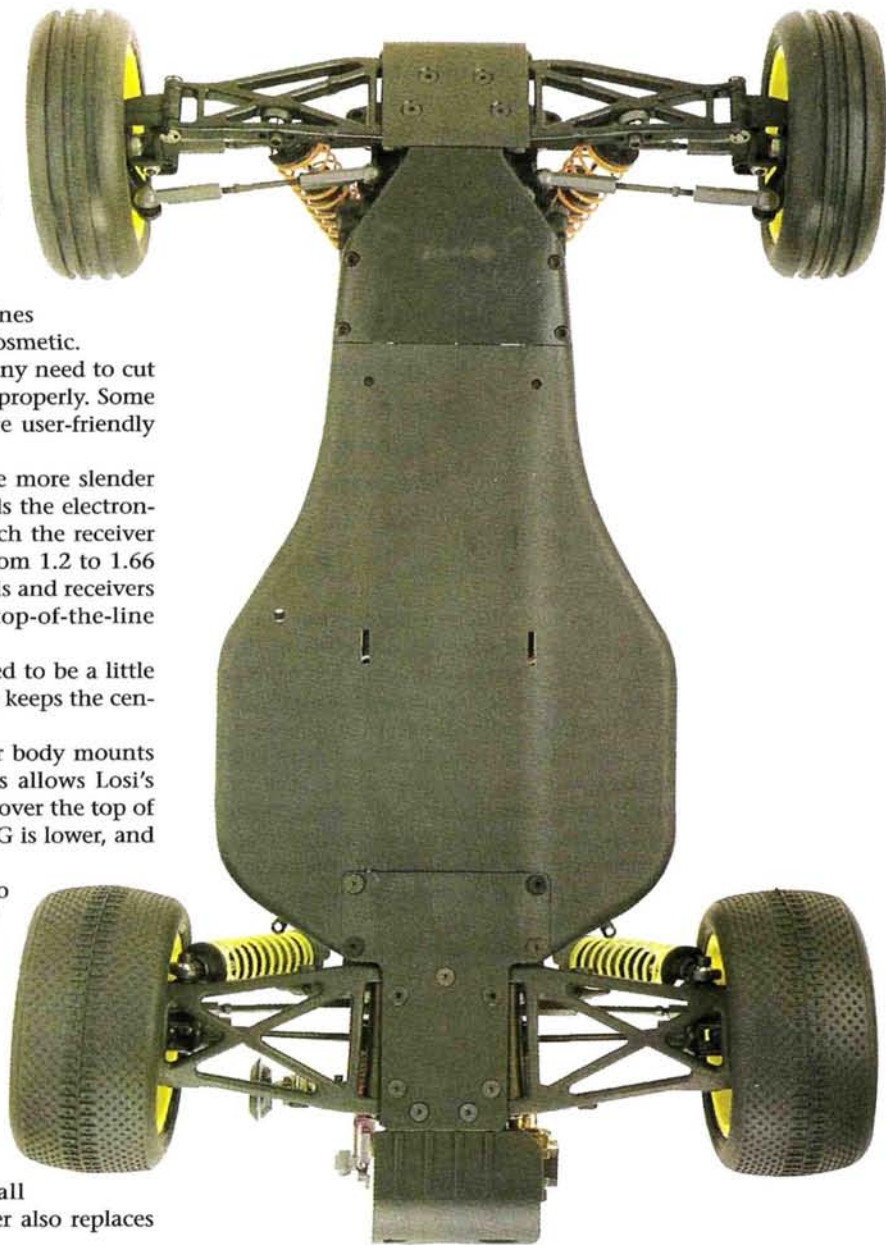
According to Gil Jr., the battery channel is supposed to be a little lower on the Triple-X, and that's another element that keeps the center of gravity as low as it can be.

The final significant topside feature is that the rear body mounts are attached to the rear-facing chassis sections. This allows Losi's new, tailless body to be attached without having it go over the top of the shock tower. The bobtail body sits lower, so the CG is lower, and it's lighter to minimize overall weight.

Before moving on from the chassis, it's important to note that its bottom has the smooth, stealthy lines of a B2 bomber. It's designed that way to prevent it from snagging anything on the ground (snagging can certainly slow you down). The front and rear clips blend in very smoothly, though I wouldn't go as far as saying they're seamless.

XQUISITE REAR END

The business end of the Triple-X starts with a new rear bulkhead that has an integrated shock tower. The integration of the shock tower reduces overall weight and also lowers the CG. This new shock tower also replaces



very straight and didn't show any signs of getting loose on the relatively slippery surface.

I entered the first few turns a little hot and noticed that the rear suspension was light, but after a quick throttle adjustment, the car seemed to gather itself up.

I also noticed an abundance of steering—much more than the Double-X. Through the washboard section at 3/4 throttle, the Triple-X stayed straight and steady as it skated over the bumps.

Several laps into the race, I was able to take the washboard section at full throttle. The car didn't toss itself from side to side; it just went straight every time. The Triple-X is incredibly smooth and transitions well out of turns and coming off irregular jumps.

Jumping was easy and smooth. I hit the face of the double and

landed slightly nose-down on the back side by letting off the throttle on takeoff. By doing this, I was able to get back on the throt-



R/C Madness track owner Chris Marcey (left) and Greg sit down to discuss the Triple-X before it hits the track.

tle more quickly. The Triple-X responds well to throttle input while airborne, and that's very helpful when adjusting the car's attitude for a proper landing.

For the second heat, I mount-

ed a pair of Pro-Line* Holeshot M3-compound rear tires, which had worked very well at this track on my Double-X cars. After taking several laps, I felt the car was definitely more hooked up. I entered and exited the corners much harder than on the previous rounds.

I handed the radio over to one of the local hotshots—Eric Derosier—to get his opinion. His first reaction was, "Wow! This car has

so much steering," and this was followed by, "It's so smooth." Eric was impressed, so much so that I had to jab him in the ribs to make him give back the radio.

If I had to pick the most

notable improvements in the Triple-X, they would have to be the steering response and overall stability. The steering is so much better, even on the loose surface of the Madness track. And I still can't get over how I was able to run flat punched through the washboard section with barely a twitch from the Triple-X. One thing is certain: I could never do that with any other car!

Bottom line: Losi has done it. It has made significant advances on its old buggy. Many considered it impossible to build a car that would work better than the Double-X, but it looks as if the Triple-X is well on its way to greatness.

Congratulations to Losi on a successful, all-new design of a car that I thought would be really hard to beat.



the wire wing mounts with more secure, molded-plastic mounts.

The shock tower is shorter to accommodate the new rear shock absorbers that feature true, hard-anodized coating and are the same length as those used on the XXT 'CR' front suspension. They are 0.2 inch shorter than

the shocks previously used on the rear of the Double-X cars, yet the shock shafts are $\frac{1}{16}$ inch longer. Why? To use more of the available shock travel; by doing this, Losi is able to make the damping more progressive, and that makes the car less likely to bottom out as the suspension reaches the limits of its travel.

Just behind the shock tower is the new transmission—a leap-of-faith change for the Team Losi gang. The transmissions in all the other "XX" cars had ratios that were thought to be ideal for the given application. The cars had different ratios from the trucks. The Triple-X's new transmission features a middle-of-the-road ratio of 2.43:1, which is well suited to both cars and trucks (hint: sounds as if a new Losi truck isn't too far down the road).

A new transmission housing stacks the gears in a more upright position and raises the top shaft; this allows the motor to be tucked in 0.35 inch closer to the tranny, and this helps to keep the car more planted under acceleration and provides better on-power steering.

The transmission also has a new motor-mounting plate that doesn't have the motor-guard section found on the older transmission. Losi molded a lighter, more flexible motor guard that saves a respectable amount of weight.

Just underneath the transmission is a new suspension mount

that offers similar benefits to those of the front end, though the older Double-X has a mount of a similar style. Much like the older design, optional mounts that will provide various degrees of rear toe-in are available. The eventual production car is expected to include a mount that provides 3 degrees of rear toe-in per side and 2 degrees of anti-squat.

Unchanged rear suspension arms lead out to new rear hubs that have been redesigned to move the hinge pin inward (away from the inside of the wheel) and upward (closer to the rear drive-shaft axis). It's intended to create the same result as the geometry in the front suspension, only to a lesser degree.

Losi has taken a very successful platform and shored up its weak points without compromising its strengths . . . even in the hands of those less blessed than Brian Kinwald, this new buggy has the potential to get anyone around the track faster than ever before.

XPECTATIONS

Buggies have already reached seemingly incredible levels of performance and refinement, so it's hard to imagine that much could be done to improve on the existing world champion Double-X,

but Team Losi has done exactly that. In our more than four weeks of test drives, assistant editor Greg Vogel and I came to the same conclusion: that the all-new Triple-X offers higher levels of performance—gains that are significant enough even for average drivers like us to appreciate and take advantage of.

Do the changes made to the Triple-X accomplish what they're supposed to? Yes. Losi has taken a very successful platform and shored up its weak points without compromising its strengths. Even in the hands of those less blessed with R/C talent than Brian Kinwald, this new buggy has the potential to get anyone around the track faster than ever before. It won't make a bad driver good, but it will certainly make a good driver faster!

COMING AT YOU FULL THROTTLE!

radio control
Nitro

THE ULTIMATE IN HIGH-SPEED EXCITEMENT

**ON SALE AT NEWSSTANDS, HOBBY SHOPS
AND BOOKSTORES IN JANUARY 2000**

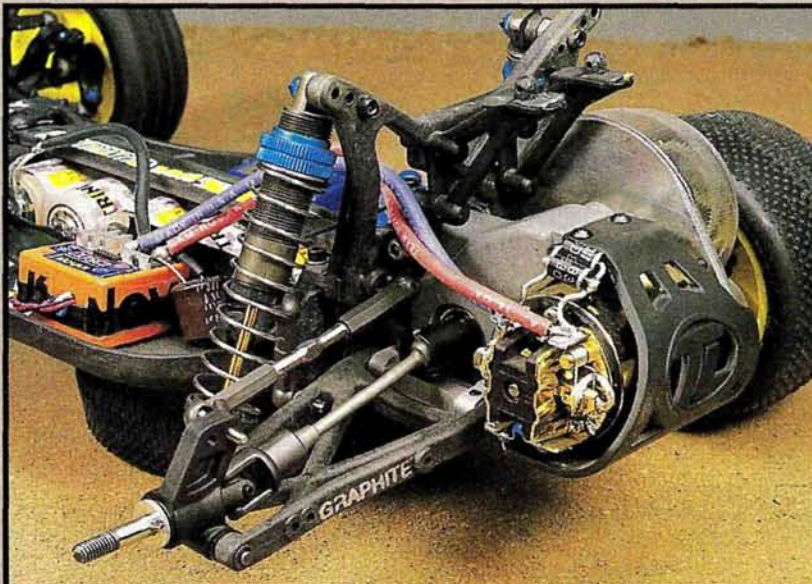
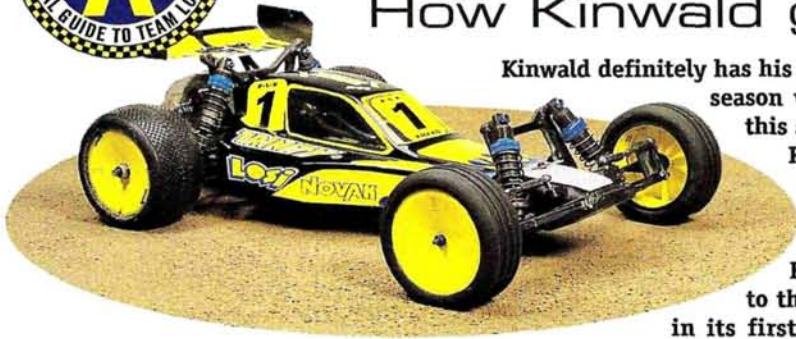
From the publishers of **RADIO CONTROL car action**



Kinwald's Nats-winning Triple-X

How Kinwald got his groove back!

Kinwald definitely has his groove back! How? The ever-talented Kinwald finished last season with a yawn and hadn't really set the world on fire early this season, but that's history. In the recent ROAR Modified Off-Road National, Brian caught his stride when he spanked the entire field by taking top honors in all three classes. The most closely followed of his three driving seminars was the 2WD class with the new Team Losi Triple-X buggy. Kinwald and his driving prowess always draw a crowd; add to the mix that he was piloting a preproduction Triple-X buggy in its first national competition—just before the IFMAR Off-Road World Championships—and the result was standing room only around the track.



Above left: an aluminum rear suspension mount is used in place of the stock plastic unit. This is extra insurance to protect against the hard outside walls at M-n-M Raceway. Note the molded graphite suspension arms and rear bulkhead/shock tower. The rear suspension mount is expected to be available as an optional part from Trinity's Team Kinwald line. ■ Above right: a front swaybar using 0.025-inch wire was installed on the front end to cope with the high-traction conditions at the Nats. This swaybar has been offered as an option for the Double-X 'CR.' ■ Below left: Brian fabricated a rear swaybar for his Triple-X using 0.050-inch wire. This was intended to help the car get smoothly through the sweepers if traction greatly improved. ■ Below right: each of the optional threaded shock bodies was fitted with two Team Kinwald aluminum shock collars. The first was used to precisely adjust spring tension; the second was installed above it to act as a jam nut to prevent accidental movement during the race.



Modified wide wheels with
Losi Silver-compound
Wide Body tires

Titanium camber
and steering links

Team Losi 0.025-inch
swaybar for Double-X 'CR'

Futaba 9402 high-speed,
high-torque servo

Team Losi threaded
shock bodies with
Trinity Team
Kinwald
aluminum
spring collars

Trinity Team VIS matched
2000 Ni-Cd cells

Novak Atom
electronic
speed control

Airtronics 3PS
radio system

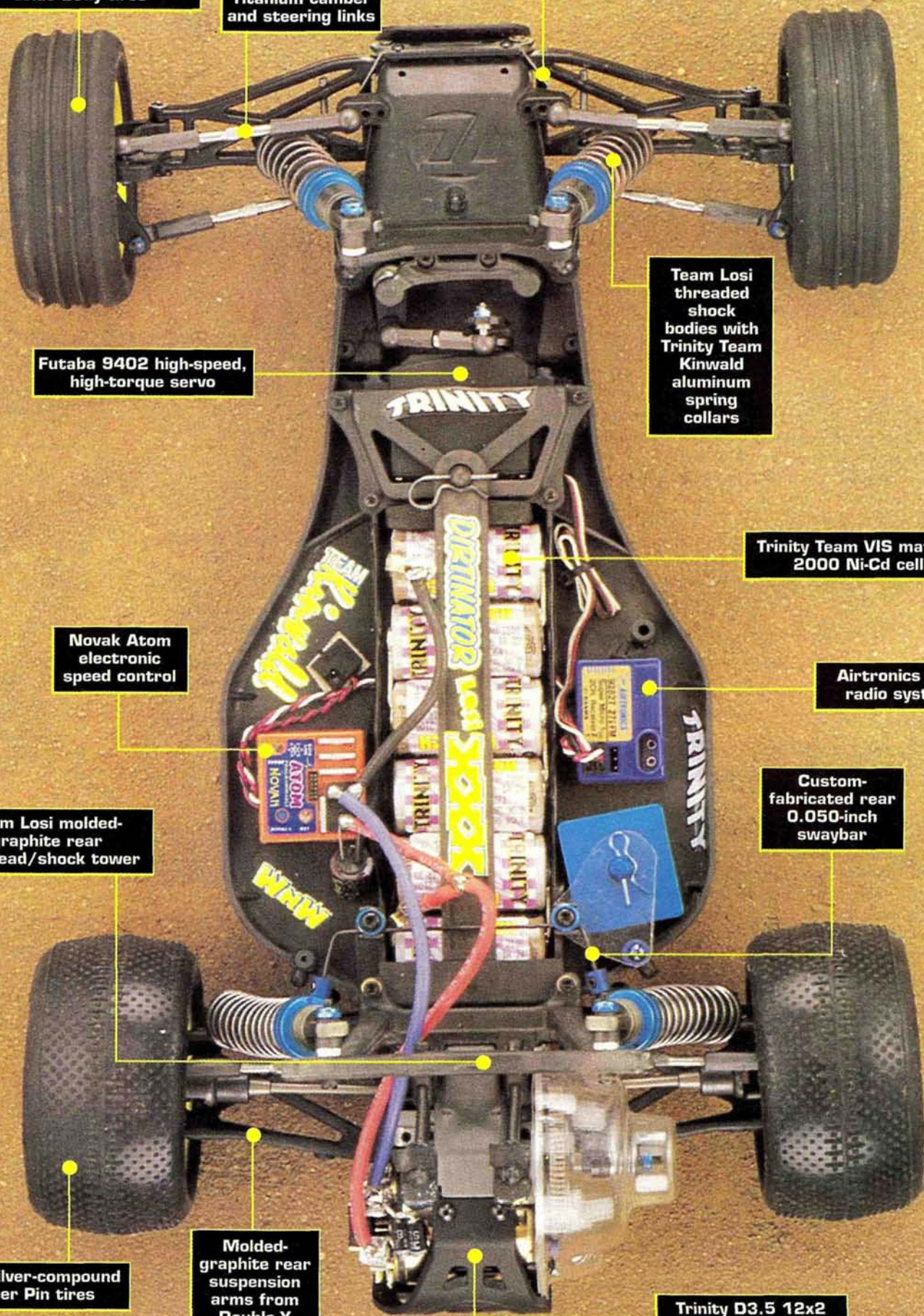
Team Losi molded-
graphite rear
bulkhead/shock tower

Custom-
fabricated rear
0.050-inch
swaybar

Losi Silver-compound
Taper Pin tires

Molded-
graphite rear
suspension
arms from
Double-X
'CR'-KE

Trinity D3.5 12x2
modified motor





Brian was kind enough to give us an inside look at his car as it was run at the Nats. He also took the time to chat with me about his impressions of the new car and the setup he ran during the race.

As a factory A-team driver, Brian benefits from all the factory's resources. Before the car even hit the streets in its standard version, he got his hands on some molded graphite parts. He replaced the chassis, rear bulkhead/shock tower and the rear suspension arms with the molded graphite pieces. Then, he replaced each of the standard shocks with Team Losi's optional threaded shock bodies that sport true hard-anodized coatings and a pair of Trinity Team Kinwald threaded shock collars. (Brian prefers the precision of spring preload adjustment offered by the threaded shock collars.) He installed an extra shock collar on each shock to ensure that the precise adjustments of the lower collars remained in place. The car was fitted with a full set of titanium turnbuckles similar to those found on the Double-X 'CR'-KE. More was added in the form of Team Losi's optional titanium ball ends in place of the standard steel units.

The front and rear suspensions were fitted with swaybars. The very thin front swaybar comes from the same optional set as has been available for the Double-X cars.

What does Brian think of the new Triple-X?

... He was very impressed with the new car's ability to run flatter through the sweepers and to accelerate and steer so well out of the corners. He also feels that it can turn in better than any car he has ever driven.

The rear was hand-fabricated by Brian but is scheduled for release by Trinity under the Team Kinwald banner when the cars hit retail-store shelves. According to Brian, the surface at M-n-M Raceway, where the Nationals were held, is usually consistently high-bite. Brian installed the swaybars as a little extra insurance against the possibility that the bite would increase further under the weekend's heavy traffic. Without the swaybars, an increase in traction could have overloaded the suspension and caused it to recoil; this would have made smooth transitions into and out of the big sweeper very difficult. Brian characterized the addition of the swaybars, however, as a precautionary measure for the unusual track conditions at M-n-M, rather than a necessity.

Turning to the rear suspension, Brian installed an aluminum suspension mount in place of the stock molded unit. The aluminum mount was intended to protect the car from accidental breakage against the unforgiving walls of M-n-M Raceway. The racing groove in the track surface drifts dangerously close to the outside wall, and it has claimed more than its share of chassis parts from the top drivers in the world. This was just more insurance that Brian's Triple-X would make it across the finish line in the event that it was sucked into the outside wall.

Brian's final modification was to the front wheels. He carefully cut the innermost lip from the inside edge of the wheels. He then took the ring of plastic that was cut free and slid it up and glued it against the next lip to effectively widen the wheels. This process

Kinwald's Championship Setup

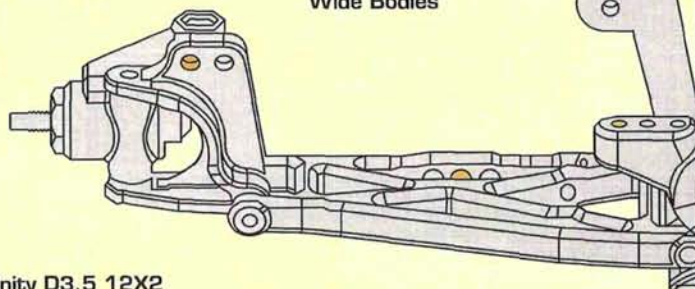
Front Suspension

Toe-angle (+/-): 0°
Ride height: arms level
Camber (+/-): -1°
Swaybar: 0.025 in.
Carrier spacing: middle
Axle spacing: narrow

Front Shocks

Oil: 25WT
Piston: no. 776 (drilled)
Spring: orange
Limiters: none

Front tires: Losi Silver
Wide Bodies



Motor: Trinity D3.5 12X2
Pinion gear: 21T
Spur gear: 78T

Rear Suspension

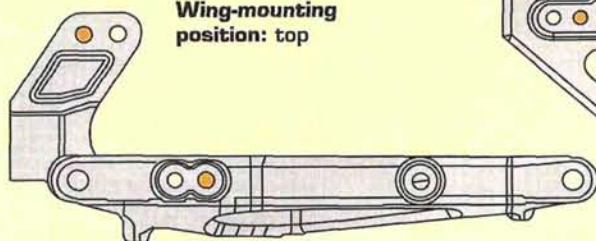
Anti-squat: 2°
Ride height: chassis level
Camber (+/-): -1°
Swaybar: 0.050 in.
Hub spacing: center

Rear Shocks

Oil: 25WT
Piston: no. 56
(standard)
Spring: yellow
Limiters: none

Rear tires: Losi Silver
Taper Pins

Wing-mounting
position: top



widens the footprint of the Losi Silver Wide Body tires for increased front traction and more responsive steering. It leaves the inside of the wheels without a lip or flange to secure the tires, but a careful gluing job is sufficient to keep the tires securely in place.

IMPRESSIONS

What does Brian think of the new Triple-X? He currently has more experience with it than anyone else in the world. Come to think of it, he also has more wheel time with the Double-X; he is the foremost authority on X-cars! He indicated that he was very impressed with the new car's ability to run flatter through the sweepers and to accelerate and steer so well out of the corners. He also feels that it can turn in better than any car he has ever driven. Bottom line: Brian sums it up by saying that the new Triple-X is just plain easier to drive. Of course, his enthusiasm for the Triple-X could be sprinkled with a little home-team spirit, but with his—and others'—immediate and pronounced success with the car, I tend to think his impressions are quite genuine!

*Addresses are listed alphabetically in the Index of Manufacturers on page 209. ■

READY-TO-RUN NITRO

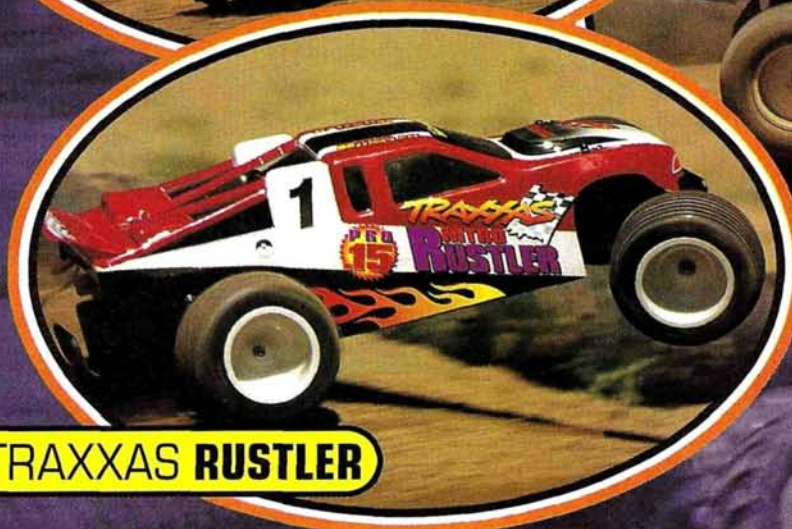
DURATRAX MAXIMUM ST



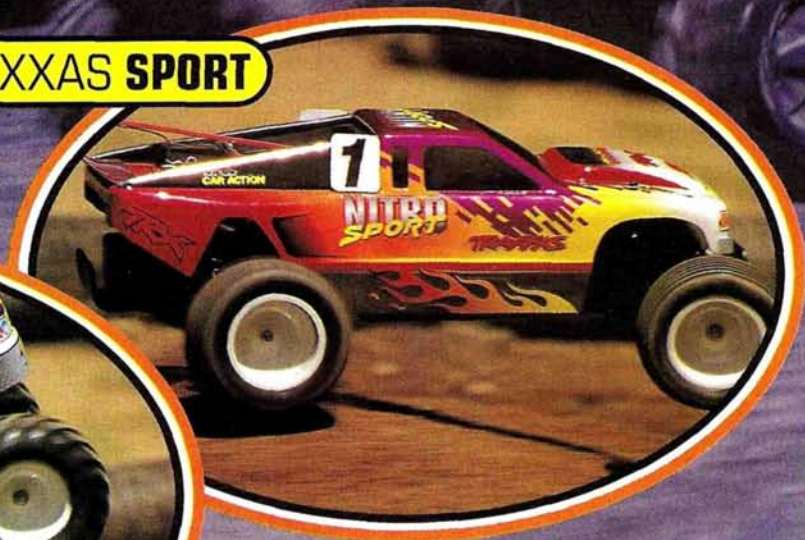
MRC THUNDER KING



TRAXXAS RUSTLER



TRAXXAS SPORT



TRAXXAS STAMPEDE



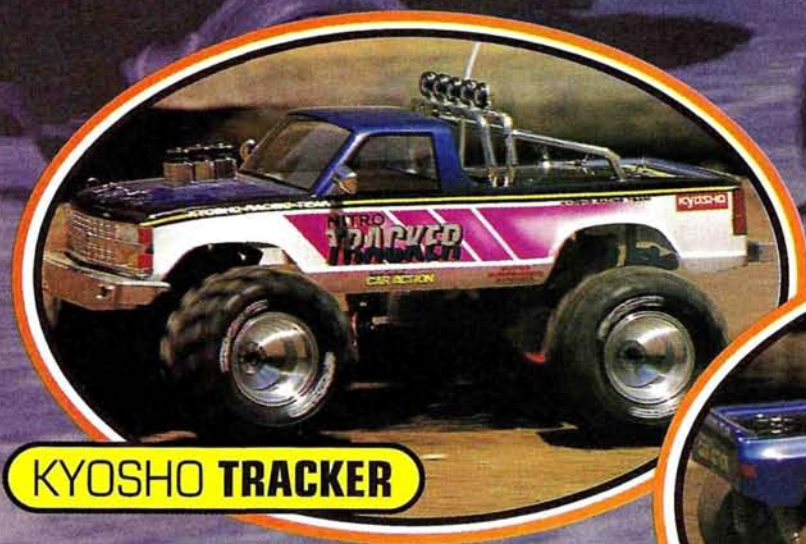
TRUCK SHOOTOUT

FLATBED FRENZY

by the Staff of R/C Car Action

MOST OF US got our start in the R/C car scene with electric models and reserved nitro-powered cars for some fuzzy time in the future when we felt we would be "ready." After all, those finicky "gas" powerplants and their complicated control linkages were for guys who really knew what they were doing—still are, right? Well, no! Thanks to the new breed of ready-to-run (RTR) vehicles that roll out of their boxes assembled and with radio gear installed, it's now easier than ever to experience the sound, smell and performance of nitro power. Some even have electric starters!

We decided it was high time for a shootout, so we corralled the vehicles that represent the most active hotbed of RTR action: trucks. Currently, DuraTrax, Kyosho, MRC and Traxxas are after your instant-excitement dollar with trucks that offer different levels of complexity, convenience and horsepower. We tell you which is the easiest to run, the quickest to build and the flat-out fastest—plus a whole lot more!



KYOSHO TRACKER



KYOSHO SANDMASTER ST-2

FLATBED FRENZY

TOP
RATED
#1

DURATRAX MAXIMUM ST



AT A GLANCE

- Street price: \$249.99
- Engine displacement: .12ci
- Starter: pull-start
- Box-to-backyard time: 5 minutes
- Top speed/elapsed time*: 32.35mph/6.69 seconds
- Not included: glow-starter, fuel

*Tested on pavement with leanest safe mixture setting on Traxxas 20%-nitro fuel.



ASSEMBLY

The only way this truck could be more "ready to run" is if it arrived idling in the box! The body is already painted and trimmed, and the truck is fully assembled right down to its glued tires. All you have to do is snip three zip-ties to get the truck out of the box, install the included batteries for the radio and receiver, slide the antenna wire into the antenna tube, slip the air filter over the carburetor and go.

FEATURES

This is a well-equipped truck! Standard items include an all-aluminum semi-tub chassis, oil-filled shocks with threaded aluminum bodies, a painted body and 3-gear tranny with ball bearings. DuraTrax's "Stress Tech" suspension parts are guaranteed for six months against breakage, and the included Torq .12 engine features a heat-sink head and bearing-supported crankshaft. There's even a "Starting and Tuning Your New Nitro Engine" video right in the box! Add the video to the thorough manual, and you have a solid start in nitro trucking.

PERFORMANCE

- **ENGINE** As long as it was primed properly, the Max's Torq .12 engine fired up on the first or second pull. The Max has some healthy scoot, but it requires a long run-up to reach its impressive 32mph top speed. Minimal needle fiddling was required once the engine had warmed up and been dialed in.
- **JUMPING** Feel free to sky this rig. It will launch nice 'n' flat off rollers, but lipped jumps tend to kick up the back end. Once the truck is airborne, you may have to stay on the gas to keep the chassis level. We noticed a lot of chassis flexing under hard use, but the truck held up fine.
- **ROUGH TERRAIN** The Max has one of the most supple suspensions tested and has additional "suspension" in the form of its large, soft tires. The truck stayed shiny side up on all reasonable terrain.
- **STEERING** With the factory camber angles, the Maximum ST will oversteer like crazy in the dirt. This is easily adjusted with the included turnbuckle linkages, but this test is all about stock, so we left it "as is."
- **RADIO** The Max includes a Hitec Lynx AM system, a solid setup with steering dual rate (a very helpful feature for the twitchy Max ST) and good reception. The grip is a little small for larger adult hands, but the average kid will have no comfort problems. The radio does not have adjustable throttle end points; this makes it more difficult to get the linkage throws perfect, but the Max's carb and brake setups are designed to absorb extra servo throw.

WHAT'S HOT

- Batteries included.
- No painting required!

WHAT'S NOT

- Body's paint chips very easily; it was already flaking off in the box.
- Here's one for the looking-the-gift-horse-in-the-mouth file: the included batteries are good for only a few tanks' worth of action. Watch that battery meter closely!
- Chassis could be stiffer.



KYOSHO NITRO TRACKER



AT A GLANCE

- Street price: \$299.99
- Engine displacement: .12ci
- Starter: pull-start
- Box-to-backyard time*: 45 minutes
- Top speed/elapsed time**: 25.84mph/5.54 seconds
- Not included: glow starter, fuel, CA (for tires), transmitter and receiver batteries, finishing supplies.

*Minus painting.

**Tested on pavement with leanest safe mixture setting on Traxxas 20% nitro fuel.

ASSEMBLY

We don't factor finishing time into the "box-to-backyard" equation, but be warned: the Tracker's many chrome-plated detail pieces take time to finish and install. It isn't difficult—just time-consuming. However, the results are worth it: the Tracker is the most scale-looking truck and is very easy on the eyes. To get the chassis rolling, you'll install the front wheel bushings then slide the wheels onto the axles, fill the shocks with oil and slide the receiver wire into the antenna tube.

WHAT'S HOT

- Great-looking body with lots of chrome details.
- Willing, easy-to-start engine.

WHAT'S NOT

- The tires rub the body.
- Suspension is stiff and bouncy.
- Receiver batteries are difficult to get to.

FEATURES

The Tracker shares many of its components with the Sandmaster, including its plastic chassis, GT-12S-CR engine and transmission. Long-travel, oil-filled plastic shocks provide the suspension, and chevron-spoke tires lend an aggressive look. The Tracker's body just might be its best feature; it's loaded with chrome details such as a light bar, grill, bumpers and fake carburetor stacks that match the satin-finish wheels.

PERFORMANCE

■ **ENGINE.** Coupled with the Tracker's low-geared tranny, the GT-12S-CR engine shines in the torque department, and that means it can accelerate with authority. It does, however, wind out a little more quickly and has a slightly lower top speed than most of the other trucks. The single-needle carb required very little fiddling, and one-pull starts were typical.

■ **JUMPING.** Sketchy; the Tracker's stiff suspension causes it to rebound aggressively on landing, and the firm, tall tires make the truck feel top-heavy.

■ **ROUGH TERRAIN.** The suspension is hindered by the large body, which rubs the tires and prevents the truck from working as well as it could. Rough stuff tended to get the truck out of shape and onto its lid.

■ **STEERING.** On tight turns, the tires rub the body, but when driven less aggressively, the Tracker was relatively neutral and showed no bad habits.

■ **RADIO.** Like DuraTrax, Kyosho specs Hitec Lynx transmitters—solid stuff, and certainly worth transferring to another vehicle down the road, but once again, those throttle endpoint adjustments are sorely missed.





KYOSHO SANDMASTER ST-2

AT A GLANCE

- Street price: \$249.99
- Engine displacement: .12ci
- Starter: pull-start
- Box-to-backyard time*: 76 minutes
- Top speed/elapsed time**: 22.37mph/5.28 seconds
- Not included: glow starter, CA (for tires), transmitter and receiver batteries, fuel, finishing supplies

*Minus painting.

**Tested on pavement with leanest safe mixture setting on Traxxas 20%-nitro fuel.

ASSEMBLY

The Sandmaster ST-2 would have been up and running a lot sooner if we hadn't had to rebuild one of the shocks because of a binding seal retainer. It's the first time we've ever had a problem with Kyosho's "Sport Shock" design (which is used on many of Kyosho's vehicles), so chances are slim that the ST-2s on your local shop's shelf will have a similar problem. Shock problem notwithstanding, the Sandmaster requires the same completion steps as the Tracker.

FEATURES

The Sandmaster ST-2 goes for a stadium-truck look with its low-slung body, dish rims and racing-style tires. A metal mounting plate helps dissipate the heat from the GT-12S-CR engine and prevents the plastic tub-type chassis from being damaged. Plastic oil-filled shocks handle the bumps, but the plastic shock towers are too flexible for our tastes (look on the bright side: they'll probably never break).

PERFORMANCE

- **ENGINE.** Give the primer on the tank a few quick pumps, place the glow starter on the engine, and give it one tug; our test engine fired up on the first pull every time. Although the GT-12S-CR wasn't the fastest powerplant in the group, it was the most reliable.
- **JUMPING.** To successfully jump the ST-2, you must hit the jump dead on, let off the throttle slightly on the face of the jump and then nail the throttle while the truck is in the air. This will send the truck sailing straight with a nose-up attitude.
- **ROUGH TERRAIN.** The composite shocks worked better on the ST-2 than the ones on the Nitro Tracker, although truly rough terrain did toss the stadium-style truck around. The outdated short-arm geometry is at fault; long suspension arms would greatly help the Sandmaster's handling.
- **STEERING.** The truck has a lot of on-throttle push, and it requires that the driver back off the gas before initiating a turn. With that tip in mind, we ran the truck around the test course without a problem.
- **RADIO.** Kyosho includes a Hitac Lynx, which performed flawlessly, but again, adjustable throttle end points would have been nice.

WHAT'S HOT

- Fun to drive.
- Willing, reliable engine.

WHAT'S NOT

- Test sample had a goofed-up shock.
- Front shock tower is about as stiff as a Twizzler.
- Receiver batteries are difficult to get to.



MRC NITRO THUNDER KING



AT A GLANCE

- Street price: \$399.99
- Engine displacement: .21ci
- Starter: electric
- Box-to-backyard time*: 20 minutes
- Top speed/elapsed time**: 39.55mph/5.02 seconds
- Not included: 12 AA batteries (for transmitter and receiver), fuel, glow starter, 7.2V battery (for the onboard starter), battery charger, finishing supplies

*Minus painting.

**Tested on pavement with leanest safe mixture setting on Traxxas 20%-nitro fuel.



ASSEMBLY

The Nitro Thunder King is quick off the bench and requires that you simply install transmitter and receiver batteries and glue the tires—assuming, of course, that you already have a 6-cell stick-pack battery (as used with electric vehicles) and the required charger.

WHAT'S HOT

- With .21 power, the King is all excitement.
- Tall ride height allows this truck to go just about anywhere.

WHAT'S NOT

- Needlessly complex starter.
- Charger and 7.2V battery required to operate this truck.



FEATURES

The Nitro Thunder King includes all the extra-strength features of MRC's electric "King" trucks, including a beefy, channeled aluminum chassis, oversize aluminum oil shocks, a ball differential- and slipper clutch-equipped transmission, thick fiberglass shock towers and—best of all—massive overall size. Unique to the Nitro truck are the Thunder Tiger .21 engine, the onboard starting system and the external gear train required to mate the engine with the designed-for-electric-power tranny. Bonus: the Nitro Thunder King now includes dual steering servos for precise control.

PERFORMANCE

■ **ENGINE.** One you've fired up the Thunder Tiger, engine tuning is fairly easy. A few minor adjustments were needed to get it idling like a champ and running with optimum performance at the top end. We were less thrilled with the overly intricate onboard starter; its exposed gears and bulky 540 motor added a lot of weight and complexity to the chassis, and the flip-down bar that holds the starter gear in place is awkward. After a dozen or so starts, the gears began to show signs of wear.

■ **JUMPING.** Small jumps hardly affect this burly machine, and when you nail a big jump, it's nothing but see-you-in-the-next-town air time. The truck's attitude when airborne can easily be adjusted by stabbing the throttle or brake.

■ **ROUGH TERRAIN.** Like small jumps, any bump is destroyed by the King. You can get this truck sideways, but it would be very hard to get it past the point of no control.

■ **STEERING.** Now that the King has two steering servos, it is much easier to control. We were able to turn it within a 6-foot-wide lane at our local track. Need a tighter turn? Quickly tap the brakes and watch the rear end swing around.

■ **RADIO.** MRC includes a Futaba Magnum Sport radio set with the King. Futaba has a long history of producing excellent radio systems at all price points, and the Mag Sport doesn't disappoint. It does, however, lack the throttle endpoint adjustments of the Magnum Junior; adjustable endpoints are an invaluable tuning aid for nitro-powered vehicles.

FLATBED FRENZY



TRAXXAS NITRO SPORT

AT A GLANCE

- Street price: \$274.99
- Engine displacement: .15ci
- Starter: EZ-Start (electric)
- Box-to-backyard time*: 15 minutes
- Top speed/elapsed time**: 24.78mph/4.45 seconds
- Not included: 12 AA batteries, fuel, 7.2V battery for the starting unit, CA glue, finishing supplies

*Minus painting.

**Tested on pavement with leanest safe mixture setting on Traxxas, 20% nitro fuel.

FEATURES

The Nitro Sport is aimed expressly at first-time nitro owners; it has a simplified steering setup (the tie rods are joined directly to the servo), a bend-proof plastic chassis nose and upper deck and an enclosed receiver box. Like the other Traxxas RTR trucks, the EZ-Start electric starter is bolted to the .15 engine, which is fitted with a carburetor restrictor on the Sport version only. Bonus features include a tuned-type pipe, turnbuckle linkages, telescoping universal drive shafts and an easy-to-access battery box.

PERFORMANCE

- **ENGINE.** The engine was a bit finicky to start, primarily because of the fuel tank. The primer bulb doesn't work very well, and some fuel exits through the pressure tap. Once we did get fuel to the engine, it fired up easily with a press of the EZ-Start button and then kept running. The engine's carb restrictor results in a much mellower power delivery than those of the Rustler and Stampede. The Nitro Sport is fast enough for any first-timer, but it won't overpower young nitro enthusiasts. Bummer file: the rubber exhaust coupler split after a few runs.
- **JUMPING.** Stadium-type trucks like the Nitro Sport are perhaps the easiest to jump. Long suspension arms keep it stable as it takes off the face of the jumps, and landings are soaked up easily by the long-travel shocks.
- **ROUGH TERRAIN.** The Sport doesn't have the ground clearance of a monster truck, so there is a limit to where you can go. Cut grass and small moguls weren't a problem, but big, burly ruts put the Sport onto its roof.
- **STEERING.** Due to its direct-link steering setup, the Sport had a wider turning radius than the Rustler, but it's a little more forgiving, thanks to a bit of understeer, and it's very easy to drive.
- **RADIO.** The Traxxas Top Qualifier radio gets the job done, but some of us found its unconventional shape rather uncomfortable. Like the other trucks' radio systems, the TQ transmitter does not have adjustable throttle endpoints. Otherwise, no glitches or range problems to report.



ASSEMBLY

Once you've dropped in the transmitter and receiver batteries, slipped the air cleaner on, threaded the antenna and glued the tires, the Nitro Sport chassis is ready to roll.

WHAT'S HOT

- Ball-bearing tranny.
- Effective electric starter.
- Well-protected receiver box.
- Rugged chassis.

WHAT'S NOT

- Electric starter requires the purchase of a 7.2V battery and charger.
- Tires wear particularly quickly on asphalt.
- Fuel tank pumps a lot of nitro out through the pressure line.



FLATBED FRENZY



TRAXXAS NITRO STAMPEDE

AT A GLANCE

- Street price: \$309.99
- Engine displacement: .15ci
- Starter: EZ-Start (electric)
- Box-to-backyard time*: 15 minutes
- Top speed/elapsed time**: 29.24mph/5.31 seconds
- Not included: 12 AA batteries, CA glue, 7.2V battery, charger, fuel and finishing supplies

*Minus painting.

**Tested on pavement with leanest safe mixture setting on Traxxas 20%-nitro fuel.



ASSEMBLY

Expect to hit the track (with the chassis, at least) in well under 30 minutes. Slide the truck out of the box, slip in the batteries, slide on the antenna and air filter and you're ready for takeoff.

FEATURES

The high-riding Stampede is the "monster" of the Traxxas RTR line; it features class-leading maximum ground clearance with a raised aluminum chassis and molded "ladder bars." The suspension is fully independent and oil-damped, and the truck includes the same high-performance .15 TRX engine with EZ-Start as the Rustler, but a unique (and cool-looking) dual-exhaust setup replaces the Rustler's tuned-type pipe.

Telescoping universals and a slipper clutch outfit the tranny, and turnbuckle linkages are a bonus.

WHAT'S HOT

- Ball-bearing tranny.
- Extremely durable.
- Pulls wheelies!
- Twin-tip exhaust.

WHAT'S NOT

- Our sample truck's flywheel loosened.

PERFORMANCE

■ **ENGINE.** The TRX-15 fired almost instantaneously and ran fine during break-in, but subsequent restarts weren't as easy. It turned out that the flywheel was loose, and that required a not-very-beginner-friendly tear-down to fix. Once we had made the repairs, the Stampede ran superbly, and thanks to its conventional fuel-tank vent system, we had none of the fuel-flow problems we encountered with the Sport and Rustler.

■ **JUMPING.** You might think the Stampede's tall tires and high center of gravity would make it tipsy, but it was among the most stable we tested. The gyro effect of its big tires no doubt contributed to its impressive stability in the air, and there's plenty of plush suspension to soak up the landings. We probably put this truck through the most intense torture, and it just kept coming back for more.

■ **ROUGH TERRAIN.** With its tall ground clearance, torquey engine and aggressive tires, the Stampede will go just about anywhere. If the big truck couldn't crawl over an obstacle, with a little speed, it could usually bounce over it. The Stampede is just about unstoppable.

■ **STEERING.** Like the Sport, the Stampede uses a direct-linkage steering setup—no bellcranks. Its turning radius is very tight for a big-tire truck, and its handling is forgiving, thanks to a bit of under-steer at speed.

■ **RADIO.** The same reliable Traxxas TQ setup as equips the Sport and Rustler controls the Stampede.





TRAXXAS NITRO RUSTLER

AT A GLANCE

- Street price: \$299.99
- Engine displacement: .15ci
- Starter: EZ-Start (electric)
- Box-to-backyard time*: 15 minutes
- Top speed/elapsed time**: 29.68mph/6.75 seconds
- Not included: 12 AA batteries, CA glue, 7.2V battery, charger, fuel, finishing supplies

*Minus painting.

**Tested on pavement with leanest safe mixture setting on Traxxas 20% nitro fuel.



ASSEMBLY

The steps needed to complete the Sport are also required for the Rustler. While you are gluing the tires and installing the batteries, charge a 7.2V battery so that you'll be ready to fire up the engine by the time you've finished prepping the chassis.

FEATURES

The Rustler looks like a clone of the Sport, but there are important differences between them: the Rustler has more precise bellcrank steering, an all-aluminum lower chassis, a traction-enhancing slipper clutch, and an engine that offers more performance because of its larger heat-sink head and unrestricted carb. As on the Sport, telescoping universal axles get the engine's power to the wheels, and long suspension arms with matching long-travel oil shocks are fitted.

PERFORMANCE

- **ENGINE.** We experienced the same fuel blow-back problems with our Rustler as we did with the Sport. Once sorted out, our Rustler sample fired up quickly and easily via the EZ-Start and needed only a few minor tweaks to run well. The peppy engine and aggressive gearing tore up the test track with some quick lap times.
- **JUMPING.** Just like the Sport, the Rustler hit the jumps with authority and landed with full control, allowing you to stab the throttle as soon as the truck touched down instead of waiting for the chassis to settle.
- **ROUGH TERRAIN.** Like the Sport, the well-suspended Rustler easily conquered anything less than truly brutal conditions.
- **STEERING.** The bellcrank-style steering gives the truck enough throw to have a tight turning radius. On the track, the Rustler hugged each turn tightly and allowed us to drive out of corners on the throttle.
- **RADIO.** Traxxas' house-brand radio performed reliably.

WHAT'S HOT

- Ball-bearing tranny.
- Aluminum chassis.
- Powerful engine.
- Slipper clutch protects tranny, improves traction.

WHAT'S NOT

- Fuel tank pumps a lot of nitro out through the pressure line.



editor's picks

EDITORS' PICKS



▲ George Gonzalez

As many of our loyal readers probably know, I have a great affinity for Traxxas R/C products. That said, I chose the Nitro Rustler as my favorite RTR truck. Why the Rustler and not the Sport or Stampede? Being a racer at heart, I need a truck that can run with the big boys on an off-road racetrack, and in my opinion, the Rustler is the only RTR truck in our shootout that's up to the task. With its thick aluminum chassis, ball-bearing-supported drive train, slipper-clutch-equipped, 3-gear racing tranny and long-travel suspension, the Rustler can hold its own against some of the best nitro-powered off-road trucks available.

I also happen to like the EZ-Start system and think that it makes operating a vehicle more enjoyable. I've shown up at the track with a Rustler equipped with an onboard starter and had to take a lot of flak from some of the racers—until I qualified with a faster time than many of them did! Here's the deal: if the EZ-Start System turns you off, you can always pick up a Traxxas pull-starter mechanism and install it on the engine in place of the EZ-Start system. The conversion will cost less than \$15 and will probably take an entire 10 minutes to complete.



▲ Peter Vieira

I think the DuraTrax Maximum ST is the top truck here. It's the fastest of the small-block trucks, it looks good, you don't have to paint it, the radio is nice, the included tuning video is excellent; it's just a well-thought-out package. In the credit-where-credit-is-due department, the Traxxas trucks are all excellent and perform better than expected for "entry-level" machines. MRC's Thunder King is absolutely the most fun to drive, and the Kyosho engines were the most reliable. But to my mind, the most important feature of an "RTR" truck is its ready-to-run-ness, and the Maximum ST is simply the easiest to complete truck of the bunch.



▲ Steve Pond

I'm with Peter on this one. Each of the trucks represents a decent value to anyone who's in the market for a nitro RTR truck, but in my opinion, the Maximum ST represents the best all-around bang for the buck. It's reasonably priced and is the most ready-to-run of the gang. A glow starter and a bottle of fuel are *all* that you'll need to get the ST up and running. It has the longest list of gotta-have-it features, yet it's smartly void of frivolous ones that require additional expense to get up and running. A strong, high-speed performance is tops with the RTR crowd, and next to the big-block-powered Thunder King, the Max ST clocked the fastest top speed. Granted, it takes the Max ST the longest time to get to top speed, and that would hurt it in a drag race, but if speed is king in your book, this is the fastest of the little trucks.



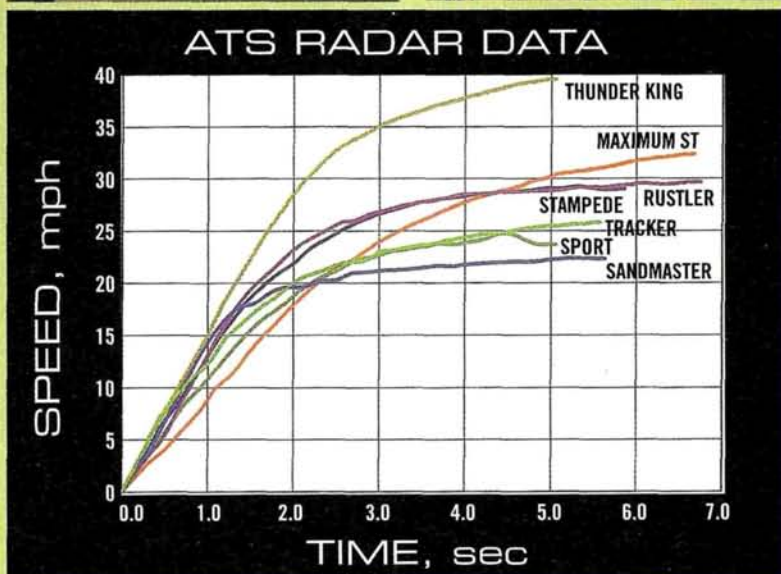
▲ Greg Vogel

It was pretty hard picking a favorite. The Kyosho trucks ran reliably, the Thunder King was a big-wheel bullet, the Maximum ST went anywhere, and the Traxxas Sport and Rustler were just a blast. But, as many of you already know, I'm a huge Traxxas Stampede fan, and this holds true for the nitro version. Like its electric brother, the Nitro Stampede is a durable, fast, fun vehicle. Yank the trigger on a surface with traction, and the front wheels pop up as if the truck is begging to be run. Jumps aren't a threat, as I proved when I ran the Nitro Stampede off some insane BMX jumps and landed it rubber down and shiny side up every time. My only gripe is the absence of a pull-start option; I'm not into the added weight of the EZ-Start system or the extra hassle of charging a 7.2V battery and plugging in the remote starter for each start.

	DURATRAX MAXIMUM ST	KYOSHO SANDMASTER ST-2	KYOSHO TRACKER	MRC NITRO THUNDER KING	TRAXXAS SPORT	TRAXXAS RUSTLER	TRAXXAS NITRO STAMPEDE
Speed/acceleration	8.5	7	7.5	10	7.5	9	9
Jumping	8	6	6	9	9	9	9
Stability	9	8	7.5	9.5	9.5	9.5	8.5
Durability	9	7.5	7.5	6	8	9	9
Ease of completion	10	8	8	9	9	9	9
Ease of operation	10	10	10	7	7	7	8
Preassembly quality	9.5	8	9	9	9	9	8
Total	64	54.5	55.5	59.5	59	61.5	60.5
Ranking	First	Seventh	Sixth	Fourth	Fifth	Second	Third

RADAR TESTING

If all you care about is raw performance, this chart is all you need. Courtesy of the official R/C Car Action better-than-what-the-cops-use radar gun, we downloaded all the cool acceleration and top-speed data you see here. Now, before you get all excited about top speed, don't forget to check out the figures for distance traveled versus elapsed time. For example, the DuraTrax Maximum ST is clearly the fastest of the .12 and .15-powered trucks, but it isn't the quickest off the line; it requires a full 6.69 seconds to reach top speed. Check out the distance traveled at the 1-, 2- and 3-second intervals; every truck beats the Maximum ST! "So what?" you ask, "as long as I'm the fastest." That's fine if you're after parking-lot speed-run bragging rights, but on a closed course, no straightaway will let you clamp the throttle for 6 seconds to wind out the Max. But, hey, these aren't closed-course racetrucks. The whole point of showing this data is to help you decide which truck is right for you based on what you want to do with your truck. That, and the performance numbers, are just plain fun to compare. We could look at this stuff for hours!



Note: colored lines on graph correspond with colors used in chart below.

PERFORMANCE COMPARISONS

	TOP SPEED (MPH)	ELAPSED TIME TO TOP SPEED (SECS.)	NO. FEET TRAVELED IN 1 SEC.	2 SECS.	3 SECS.	4 SECS.
DuraTrax Maximum ST	32.35	6.69	6.37	26.2	57.41	95.56
Kyosho Sandmaster ST-2	22.37	5.28	10.48	36.74	73.00	113.62
Kyosho Nitro Tracker	25.84	5.54	10.59	35.20	66.90	101.62
MRC Nitro Thunder King	39.55	5.02	11.57	44.42	92.05	145.68
Traxxas Nitro Sport	24.78	4.45	8.55	31.01	62.10	96.51
Traxxas Nitro Rustler	29.68	6.75	9.16	37.08	74.32	115.06
Traxxas Nitro Stampedo	29.24	5.31	9.89	36.74	73.00	113.62

MAINTAINING YOUR NEW TRUCK

There's more to truck maintenance than we can fit here, but these basic tips will keep your truck running strong and help you avoid the most common nitro-truck problems.

■ KEEP IT CLEAN!

This is a biggie. After running it, clean off your truck before you put it away. It's much easier to clean off a little dirt after each session than to tear the car down after a month of running; and with frequent cleanings, you are much more likely to spot potential problems that will be caused by loose and damaged parts.

■ CHECK ALL FASTENERS FOR TIGHTNESS

Do this after every session—if not after every

tankful. Nitro vehicles vibrate a lot, and that wreaks havoc with nuts and bolts. Check fasteners frequently, or expect parts to fall off.

■ DRAIN THE FUEL TANK BEFORE STORING YOUR VEHICLE

If you can't run the tank dry before you pack up for the day, drain away any remaining fuel. If you don't, the nitromethane will evaporate, leaving gummy oil residue to coat your engine's vital parts.

■ USE AFTER-RUN OIL

Before you put your truck away for the day, remove the glow plug, and drip a drop or two of after-run oil from Prather* or Hobbico* into the engine, then cycle the piston a couple of times with the starter. This will prevent corrosion and ensure that everything is well lubed for your next run.

	DURATRAX MAXIMUM ST	KYOSHO SANDMASTER SF-2	KYOSHO NITRO TRACKER	MRC NITRO THUNDER KING	TRAXXAS NITRO SPORT	TRAXXAS NITRO RUSTLER	TRAXXAS NITRO STAMPEDE
TRUCK FEATURES							
Primary chassis	Aluminum	Plastic	Plastic	Aluminum	Plastic/aluminum	Aluminum	Plastic/aluminum
Starting system	Pull-start	Pullstart	Pullstart	Electric	Electric	Electric	Electric
Bearings/bushings	Both	Bushing	Bushing	Bushing	Both	Both	Both
Shocks	Aluminum	Plastic	Plastic	Aluminum	Plastic	Plastic	Plastic
Slipper clutch	Yes	No	Yes	Yes	No	Yes	Yes
Drive axles	Dogbone	Dogbone	Dogbone	Dogbone	Universal	Universal	Universal
Exhaust	Muffler	Muffler	Muffler	Tuned pipe	Tuned pipe	Tuned pipe	Dual-tip muffler
Camber/steering links	Turnbuckle	Fixed	Fixed	Threaded	Turnbuckle	Turnbuckle	Turnbuckle
RADIO FEATURES							
Manufacturer	Hitec	Hitec	Hitec	Futaba	Traxxas	Traxxas	Traxxas
Model	Lynx	Lynx	Lynx	Sport	TQ	TQ	TQ
Steering trim	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Throttle trim	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Steering endpoints	Yes	Yes	Yes	No	No	No	No
Throttle endpoints	No	No	No	No	No	No	No
Battery meter	Triple LED	Triple LED	Triple LED	Triple LED	Single LED	Single LED	Single LED
SPECS							
Wheelbase	10.48 in.	10.58 in.	10.58 in.	13.9 in.	11.2 in.	11.3 in.	10.40 in.
Width overall	12.35 in.	11 in.	11.5 in.	14.85 in.	12.18 in.	12.18 in.	13.25 in.
Length overall	15.5 in.	14 in.	15 in.	19 in.	16.5 in.	16.5 in.	15.77 in.
Max. ground clearance	1.89 in.	1.67 in.	1.67 in.	2.22 in.	1.85 in.	1.85 in.	2.21 in.
Weight	77 oz.	60 oz.	77 oz.	139 oz.	72 oz.	73 oz.	88 oz.
Engine displacement	.12ci	.12ci	.12ci	.21ci	.15ci	.15ci	.15ci
Fuel capacity	85cc	75cc	75cc	125cc	75cc	75cc	75cc
List price	\$399.99	\$279.99	\$469.99	NA	\$520	\$575	\$595
Street price*	\$249.99	\$249.99	\$299.99	\$399.95	\$274.99	\$299.99	\$309.99

* Prices vary with location

ARE YOU READY TO RUN? All the RTR kits we tested are complete, but you will have to buy a few items before you hit the dirt.



FUEL. Stick with name-brand, car-specific go-juice: Traxxas*, Blue Thunder*, Trinity* and O'Donnell* are a few good options. Don't get high-nitro fuels; anything more than 20-percent nitro is overkill. For all-around performance and engine longevity, 10- or 15-percent-nitro fuel is best. Pick up a gallon for about \$20, or 1/2 gallon for \$10.

FUEL BOTTLE. We've seen this a million times: mister I-can't-wait-to-run attempts to fill a new nitro machine's tank by pouring fuel directly from the jug into the tank, and it winds up in the receiver and servos instead. Don't do it! Spend a few measly dollars on a decent fuel bottle with a nice, long spout for neat, no-spill refueling (\$5).



GLOW PLUGS. Grab a couple of spares when you pick up your new kit. You'll probably foul a few as you learn to tune your engine, and you'll still need to replace them every so often, even after you've become an engine expert (\$3 each).

AA BATTERIES. You'll need 12 total: 8 for the transmitter, 4 for the receiver pack (about \$10). The DuraTrax Maximum ST includes these.



GLOW STARTER. This device will heat up the glow plug's element so it can ignite the fuel/air mixture; once the engine is running, the heat of combustion keeps the plug hot (\$20). The Traxxas RTR kits with EZ-Start have a built-in glow starter.

GLOW-PLUG WRENCH. Dynamite* makes a car-specific tool, but any 8mm nut driver will do (less than \$7).

CHARGER AND BATTERY. The Traxxas RTRs and the MRC Nitro Thunder King require a 7.2V stick-type battery to power their onboard starting systems. You'll also need a suitable charger (the other trucks do not need these items); (battery—\$15; charger—\$35).



CYANOACRYLATE GLUE. Better known simply as "CA," this is used to glue the tires to the rims. Use high-quality, hobby CA, not hardware store "super" or Krazy Glue. Pro-Line*, Trinity and Team Losi* make the best (about \$4).

The addresses of the companies featured in this guide are listed alphabetically in the Index of Manufacturers on page 209.

Quick; name the fastest high-performance type of R/C car available today. Touring car? No way. Nitro buggy? Nope. Quarter-scale? Guess again. Nothing—nothing—can top the combination of speed and handling offered by nitro-powered, 4WD, 1/8-scale on-road cars. These over-powered machines can easily surpass 70mph and



HPI by Peter Vieira Proceed

1/8-SCALE, 100-PERCENT RACING

handle turn forces that would kill the driver if the cars were scaled up to "full size." Needless to say, the 1/8-on-road scene does not tolerate inferior equipment, and the engineering know-how required to build a car that is merely satisfactory is considerable. HPI* is the latest manufacturer to take on what is known as the "F1 of R/C racing," and you can rest assured that the designers' goal for the Proceed—HPI's 1/8-on-roader—is performance that goes far beyond "satisfactory."

CHASSIS

Nothing less than a thick aluminum slab can handle the immense forces encountered in 1/8 on-road racing, and the Proceed's chassis is a high-tech piece of CNC artistry. It's 5mm thick, which would be hearty even in "regular" aluminum, but HPI specs 7075 aluminum for the Proceed. This super-hard alloy should be more than capable of handling the power of whatever .21 engine finds its way onto the chassis. A slight bevel machined into the chassis nose prevents it from being snagged on the track, and large, teardrop-shape cutouts help trim weight.

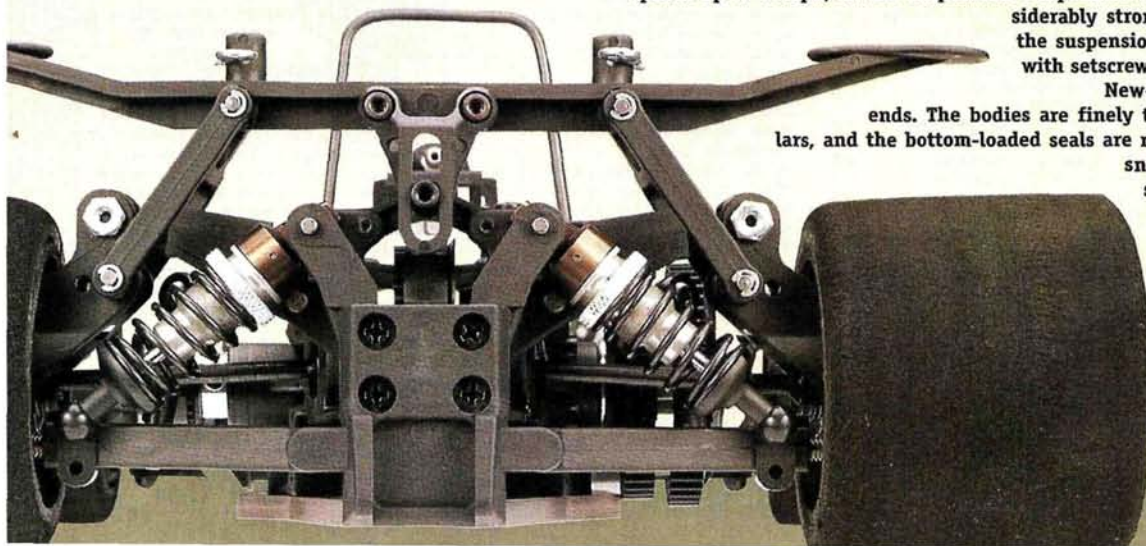
Topside, a cleanly designed 2.5mm graphite radio deck holds a side-belt tensioner and a centralized mount for a 5-cell receiver pack. Having this heavy component in its center should help the Proceed transition quickly from turn to turn by reducing the polar moment of the chassis. Only the throttle servo and receiver hang off the chassis' side, but even these parts hug the centerline closely.

SUSPENSION

Pivot-ball suspensions like those on the Proceed have recently come into vogue for touring cars, but they have been 1/8-scale design staples for years. Properly executed, a pivot-ball suspension is very precise and highly adjustable—just what you need in an 1/8-scale on-road car. Double-wishbone arms are up front, and the upper arms may be slid fore and aft on their hinge pins to adjust caster; snap-on spacers lock in the setting. Setscrew stops limit front up-travel, and the front stabilizer is an adjustable, articulated ball-and-cup type.

The rear suspension relies entirely on the two lower pivot balls for camber and toe adjustments, as the upper wishbones are fixed once assembled. A yoke-type swaybar is used here, and it is quite thick. As you might expect of a car designed to race at speeds up to 70mph, all the suspension components have a beefy, chiseled look and are considerably stronger than any 1/10 car's parts. Also, all the suspension arms' inboard hinge pins are secured with setscrews—no E-clips to lose.

New-style aluminum dampers are at both ends. The bodies are finely threaded to accept knurled preload collars, and the bottom-loaded seals are retained by a wire circlip instead of the snap-on caps used in HPI's touring-car shocks. Thick "tongues" sprout off the front and rear bulkheads to secure the upper shock mounts via short hinge pins. These are held in place by setscrews in the shock caps, making for quick disassembly.



Other stuff

Am-style body used for on-road racing (not included) to be

The Proceed uses a floating rear body mount that is connected to the hubs, not to the chassis. This allows the considerable downforce of the Can-

directly channeled to the rear wheels instead of loading the chassis. Speaking of wheels, the Proceed's are specially designed to allow easy pivot-ball access, and they look killer. Unfortunately, they cannot be used with other vehicles (likewise, the Proceed cannot accept other manufacturers' wheels).

STEERING

The centrally mounted steering servo commands the car through a heavy-duty servo-saver that is linked directly to the steering arms by steel turnbuckles. The servo-saver's included splined inserts fit Airtronics/Sanwa, Futaba, JR and KO servos.

DRIVE TRAIN

Like other 1/8 on-road cars, the Proceed is equipped with an adjustable 2-speed transmission and 3-belt drive train. Unlike the 2-speeds in most 1/10 cars that rely on a single metal "finger" to snag the second gear, the Proceed uses clutch shoes to positively engage an aluminum drum on the second gear. This setup softens the engagement slightly for a smoother shift that is less likely to cause the car to break traction. The 2-speed shares space on the layshaft with a thick, steel brake disk that gets a pinch from a rubber-padded steel caliper. An 8mm belt joins the layshaft to the rear axle pulley that is locked to the rear axle—no differential. Dogbones reach out to the stub axles that feature the quick-release wheel mounts that are vital to fast-tire-change pit stops. Dogbones and quick-release axles are also up front, along with one-way bearings for the drive cups that spin where the differential would be. Since the Proceed's front wheels are smaller than its rears, the belt system is "overdriven" to compensate; the ratio between the front and rear axles is 1.19:1.

The Proceed includes a clutch for an SG-type crankshaft. Its design is similar to Centax-style ball clutches, but instead of balls, three small shoes force a pressure plate against the clutch bell to engage the drive train. In addition to the clutch, the Proceed includes all the required engine-mounting hardware and throttle/brake linkages.

FUEL TANK

The plastic box that holds the go-juice in most cars is an off-the-shelf item, but the Proceed's tank is a cleverly designed part of the car. The shapely filler cap incorporates the pressure nipple, and internal baffles help prevent the fuel from foaming. The bottom of the tank is stepped where the fuel pick-up sips, so a pool of fuel remains around the pick-up even when the bulk of the fuel sloshes around while braking and cornering. A pair of body clips allows the tank to be easily removed without tools, and fuel-tubing pads on the tank-mounting posts help isolate the tank from vibration.

When can I drive one?

The Proceed should be on dealer shelves now. The kit will be available without engine (.21 rear exhaust required), and it will be competitively priced with the best of the current 1/8 cars, but be warned: that ain't cheap. Expect to fork over around \$800 to take a Proceed home.

Look for a "Thrash Test" of this exciting racer soon!

**Addresses are listed alphabetically in the Index of Manufacturers on page 209. ■*

RACER news

sponsored by

MIP

Race With US

by George M. Gonzalez

ROAR Fuel Nats Race Results

Once again, the top nitro off-road racers flocked to Western R/C in Las Vegas, NV, to compete at the ROAR 1/10- and 1/8-scale Fuel Nationals.

Teams from every major manufacturer attended the race, but Team Thunder Tiger/Orion/Associated factory driver Richard Saxton won every class that mattered. He took TQ honors in 1/10-scale Truck and then went on to win the A-main after battling Greg Degani, Billy Easton and Chad Bradley for 45 straight minutes. Then Saxton won the 1/8-scale Buggy A-main—the event's "showcase" class. Neither win came easily to Saxton because several drivers finished on the same lap and challenged him for the duration of the events. Look for the complete race feature in an upcoming issue of *R/C Car Action*.



M-n-M Hobbies goes Parking-Lot Racing

M-n-M Hobbies in Corona, CA, a premier indoor, off-road racing facility, has announced its plans to build a portable outdoor, on-road racing track so that Southern Californian touring-car racers will have another parking-lot racing option. The racing program began on July 10, 1999, so chances are that racers will be competing on the track by the time you read this. M-n-M Hobbies is famous for its organized and fun racing atmosphere as well as its excellent customer service and awesome off-road track. If you live in Southern California and you're looking for a place to go to rub some fenders, give M-n-M Hobbies a call for race times and schedules.

New HPI Nitro Rally and Nitro Monster Truck in the Works

HPI has announced that it is working on a new, nitro-powered rally car and monster truck that are based on a completely new chassis design. The new vehicles will feature aluminum chassis plates and shaft-driven 4WD systems that, according to HPI, are better suited to off-road racing. The rally car will be 200mm wide and designed to accommodate HPI's current line of 200mm rally bodies, but don't be surprised if the car also includes an all-new shell. The monster truck will feature a suspension roughly based on the RS4 MT's and will accept .12 and .15 engines. We'll pass along photos and additional information as soon as we get it.



Picture rally-action like this—with an exhaust trail. HPI plans to take nitro power to the rally-car scene soon.

Replacement gears for the Tamiya Juggernaut

Many of the monster truck enthusiasts who bought Tamiya Juggernauts have heard a loud clacking coming from the axles and have discovered completely stripped counter-gears.

According to Tamiya, the first production run of the Juggernaut *did* include defective counter-gears. If your Jug suffers from these ailments, stop running it immediately and call Tamiya for a replacement set. Tamiya will gladly—and at no charge—provide new, heavy-duty front and rear counter-gears that will hold up to the Jug's high torque demands.

To order your replacement gears, call (800) TAMIYA-A, or check out Tamiya's website at www.tamiya.com for more details.

RACER TIP OF THE MONTH

■ Josh Cyrul Team Trinity factory driver



For the most part, body clips do a satisfactory job of securing Lexan bodies on R/C cars. In some of the more extreme racing events such as nitro on- and off-road racing, however, body clips take a lot of abuse, and in many cases, can be ejected from the body post when the car hits a board at high speed. This leaves your body flapping around in the wind, and it can take you out of a race prematurely. Here's a little tip to keep those precious body clips in place, even during multiple crashes: simply close the open end of the body clips with a small tie-wrap, as shown in the photo. Be sure to cut the excess material from the fastener, or your car will look hack. Next time you compete in an important race, try this tip; it might just save your bacon.



RACER news

INNOVATOR AT WORK

Masami Hirotsaka

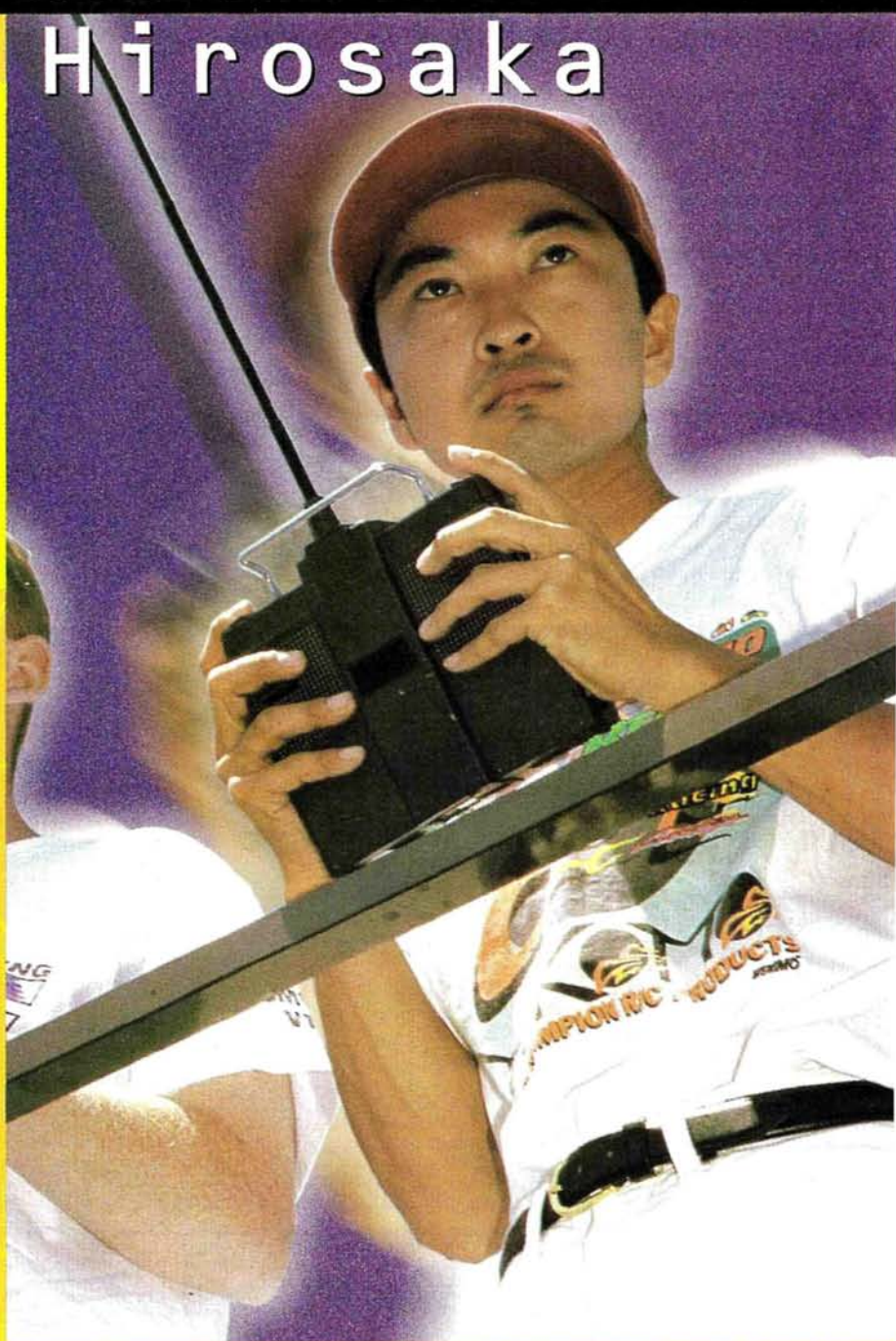
Team Yokomo driver Masami Hirotsaka is a racer who needs no introduction; he is one of the most familiar personalities in the R/C racing world. But Masami does more than just drive. Other than having a prominent racing career and owning more world championships than any other racer, Masami is also actively involved in the design process with his father, Masaki, one of the chief engineers at Yokomo. Together, Masaki and Masami are responsible for bringing hot new products to the marketplace, such as the company's new MR-4 TC sedan and MR-4 Rally car. I was able to chat with Masami at the Reedy ITC Race of Champions, the only race Masami was able to attend in the States this year.

Radio Control Car Action: It's always a pleasure to talk to you, Masami, and it was great to watch you compete at the Reedy ITC Race in Northern California. This was one of the first races you attended in the U.S. this year; you normally compete at several annual events here. What have you been up to this year?

Masami Hirotsaka: I've been very busy. I've been doing a lot of development work for new products as well as attending various promotional races around Asia and in Europe.

RCCA: The new MR-4 TC and MR-4 Rally are completely new designs that were originally introduced as "sport-level" R/C cars. Most of Yokomo's team drivers, however, are now competing with the MR-4 TC and have pretty much retired their YR4-series touring cars. In fact, the MR-4 TC now comes equipped with full bearings, ball diffs, universal drive shafts and turnbuckles, which are normally reserved for competition-oriented R/C vehicles. Will the MR-4 TC eventually replace the YR4 M2 Pro?

MH: The M2 Pro will remain our flagship touring-car model. Currently, we are promoting the MR-4 TC to show that although the car is a sport model, it has the features necessary for, and is capable of, competing at the highest levels of racing. At this year's Japanese Touring Car Nationals, I plan to have both cars ready, though.



RCCA: We've seen several different spy photos of Yokomo's nitro-powered touring car; in fact, the car was featured in one of Yokomo's ads. When will the car be available in the U.S.?

MH: Our plan is to release a nitro-powered touring car sometime this year. We are still in the prototype stages, and quite a bit of test-

ing is still required before we release the final product.

RCCA: The original appeal of touring-car racing was that you didn't need to invest a great deal of money to be competitive and have fun. Touring cars have become



extremely sophisticated now, and the sport has become very competitive, which means that much of the original appeal has been lost. One of the biggest complaints from racers is about the "tire of the week" syndrome that has plagued many other R/C racing classes. The idea of having a "control" or "spec tire" seems like a sound idea, and it's being embraced by many of the R/C manufacturers. What is your take on this topic?

MH: Tires seem to be a dilemma everywhere. I sometimes wonder how much easier it would be to have a control tire at many of the foreign races that I attend. Right now, it is hard to foresee implementation of a "control-tire" rule in Japan. First of all, hobby shops will be very reluctant to implement such a rule at the club level, since such a rule would cause many hobby shops to lose a large chunk of their sales. It also seems that many racers actually prefer to choose from a selection of tires. In my opinion, having more tires to choose from makes the hobby more interesting. Even at big races, I think that many manufacturers that support these events will balk at the rule. More than 17 companies currently manufacture tires in Japan, and this makes it one of the



Masami certainly knows how to "pay the bills." He's shown here sporting a baseball cap from Pioneer Electronics. Masami is an icon in the R/C world, so I'm sure Pioneer is happy with the venture.

also think that it is certainly plausible that without a tire rule, the number of participants might decrease. It would be difficult to implement a control-tire rule in Japan, but I think that the rule might be good for the U.S. market. It might also be a good idea to have all the tire manufacturers get together to select a tire from each for racers to choose from at some of the larger races.

RCCA: Thanks for that compelling answer. Even though touring-car racing has become huge worldwide, off-road racing is still extremely popular in the U.S. Does Yokomo plan to expand its product line in this popular category?

MH: From what I have seen around the world, there is simply no other category in racing that is larger than touring cars. We do have a few new products in the off-road category that will be introduced this year, though.

RCCA: I understand that you are very famous in Japan, and I've heard that you've been featured on Japanese TV shows and even in cartoons. Is this true? I know, too, that you are starting to attract some non-R/C related sponsors, such as the consumer electronics giant Pioneer. How did you attract the attention of such a "mainstream" company?

MH: So far, I've been in about 10 television shows and one cartoon. Pioneer approached me; they felt I could help them get their name

out to younger audiences. It has worked out well, since I travel quite frequently to many different places.

RCCA: Too bad Pioneer doesn't make mini car stereotypes that we could attach to our R/C cars! As we conduct this interview, the IFMAR Off-Road Worlds is just around the corner. Have you been busy getting ready for the event? What has been the most difficult aspect of preparing for the Worlds in Finland?

MH: I wasn't able to attend the pre-Worlds warm-up last September in Finland, so it has been pretty difficult to prepare for the event. I think the key will be how well the cars can be set up during the controlled practice sessions.

RCCA: You're the reigning 4WD World Champion and will be defending your title. How do you think you'll do at the event? Who do you think will be your toughest competitors, both in 2WD and 4WD?

MH: I've never run the MX-4 at that track in Finland, so it's really hard to say how well I'll be able to set up the car. In 4WD, I think Mark Pavidis will be very fast, along with Teemo Leino and Jukka Steenari. In 2WD, Brian and Jukka will be very tough.

RCCA: So, what's the real Masami Hirose like? What kind of car do you drive? What is your dream car? What kind of music do you listen to, and what do you like to do when you're not working or racing?

MH: I'm just a regular guy, pretty much how I am at the track. I drive a Honda Odyssey, but I'd like to own a big RV so I could take it to the races. I don't really listen to too much music, but I generally like the laid-back types of tunes.

RCCA: Thanks for your time, Masami. I wish you well at the Worlds and with all of your future endeavors.



Masami and his dad, Masaki, travel all over the world together. There are plenty of father-and-son teams in R/C, but the Hirose team is the most prominent.

most competitive segments of the R/C market.

A control-tire rule seems more feasible at manufacturer-sponsored races. These races are very easy to control, since only one manufacturer supports the event. I'm not too familiar with the U.S. market, so it is difficult for me to say whether a rule like this would work in the U.S. I myself am an employee of Yokomo, and I participate at races to help market our products. I think that races are a great way to promote our products, so I am not in favor of having any sort of tire rule. At the same time, I



Masami's MR-4TC is shown here with the company's new Stratus body. As you can see, Masami has a new racing livery.



RACER news

Speed Shop

TS Racing High-Performance Lubricants for R/C Cars

TS Racing* is relatively new to the R/C scene, but its high-performance R/C lubricants have helped many Team Losi, Team Associated and Team HPI factory drivers win championships for years. According to TS Racing, its Diff Lube is unlike any other presently on the market; it features superior clinging that allows various parts of the diff (balls, rings and bearings) to be coated more evenly, thereby prolonging diff life. Basically, the Diff Lube will not be flung off by the centrifugal force of the diff action, and this keeps the vital diff components lubricated for longer periods. For easy application, TS Racing Diff Lube is also sold in a handy syringe.

TS Racing's Dat Lube is designed specifically for the planetary and bevel-gear differentials found on many sport-level R/C kits. Dat Lube was created to fight high temperatures; it features superior clinging, which keeps the lube on the gears, not on the diff housing. Dat Lube is suitable for electric and gas, 1/10- and 1/8-scale, plastic and metal gears. Diff action can be adjusted by varying the amount of lube placed on the gears. A light coat will allow free diff action, while a thick coat will slow down diff action.

Da Green Stuff (hey, I didn't come up with these names, OK?) is a super-smooth grease that's used to assemble shocks without the risk of scratching the O-ring seals. According to TS Racing, Da Green Stuff is



the most slippery "green grease" on the market, and its performance even surprises most skeptics. Racers reportedly apply a light coat of Da Green Stuff to the outside of their cars' non-sealed bearings to provide a seal, and this keeps out dirt and grime.

TS Racing also offers a special lubricant that's perfect for wheel and motor bearings. TS Racing Bearing Oil is slightly heavier (most of the bearing oils on the market have a much thinner viscosity), and this keeps the lube on the bearings longer. In addition, a minimal amount of Teflon is added for protection against metal-to-metal contact. The products mentioned here are available at all Hobby Shack outlets, and the company is listed in the "Index of Manufacturers" on page 209.

Diff Lube—part no. TS-001, Dat Lube—TS-003, \$6; Da Green Stuff—TS-004, \$4; Bearing Oil—TS-002, \$5.

Penguin R/C Pro Strap System

Tired of using strap-ping tape to mount battery packs on your Yokomo YR-4 M2 Pro? Penguin R/C* has a product that's guaranteed to make life easier in the pits. The new Pro Strap System uses hook-and-loop tape to hold the cells securely in place and makes it quick and easy to



mount your battery packs. The hook-and-loop tape is secured to the chassis with trick-looking graphite plates, and the kit includes all the necessary fasteners and instructions. The Pro Strap System can be set up to accommodate either 4x2 or 3x3 saddle-pack configurations; no modification is necessary to install the system.

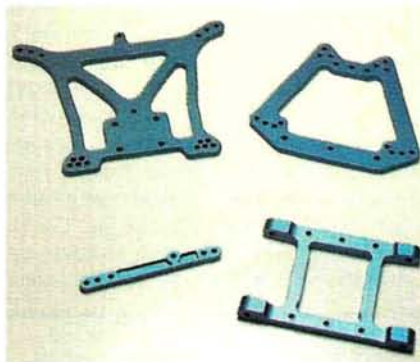
Racing purists may balk at the idea of using a battery-mounting system because it adds a marginal amount of weight to the vehicle, but according to ROAR rules, the Yokomo YR-4 M2 Pro is considerably underweight—even with the Pro Strap System installed. I'm all for convenience, folks, and with a suggested retail price of \$17.99, the Penguin R/C Pro Strap is difficult to pass up.

Part no.—P1702; \$17.99.

Bulletproof Team Kinwald Parts for the NXT and GTX

Check out these new Trinity/Team Kinwald* blue-anodized, machined-aluminum suspension components for the Team Losi NXT and GTX gas trucks. Now you can beef up your truck's suspension while adding some flash to the chassis. The front and rear shock towers (sold separately) are 3/16 inch thick and look as if they can withstand serious gas off-road abuse. Many different shock and upper camber-link mounting choices are provided, and the towers can be bolted right on without modification.

The Team Kinwald rear A-arm mount should be considered a "must-have" item because it replaces the stock molded arm mount with a solid, machined-aluminum unit that's much stronger. This area of the vehicle takes enormous abuse, and many racers have lost races because their rear arm mounts broke after casing a jump. The Team Kinwald NXT/GTX steering link replaces the stock fiberglass drag link and is blue-anodized, machined-aluminum that matches the rest of the Team Kinwald components.



NXT parts:

- Shock towers (F/R)—**part nos.** TK0301/TK0201; \$23.99/\$28.99.
- A-arm mount (rear)—TK0801; \$33.99.

GTX parts:

- Shock towers (F/R)—TK0300/TK0200; \$23.99/\$28.99.
- A-arm mount (rear)—TK0800; \$33.99.
- NXT/GTX steering link—TK2500; \$12.49.



RACERnews

RACER PROFILE

JON ORR

Team GM/Associated/Yokomo driver Jon Orr may not be as well known as some of the other top drivers, but I'm certain that in a few short years, he'll be considered "the man to beat" in the highly competitive $\frac{1}{12}$ - and $\frac{1}{10}$ -scale arenas. Jon is a ROAR $\frac{1}{12}$ -scale national champion, a U.S. indoor champ, a two-time Triple Crown champ, a three-time Grand Rapids winter champ and a five-time IFMAR Worlds finalist; that includes a second-place finish in $\frac{1}{12}$ -scale and a third-place finish in Pro 10 at the On-Road Worlds in England last year. There's no doubt that Jon has an impressive resume; let's find out what makes him tick.

VITAL SIGNS

Age: 27

Occupation: pilot scheduler for U.S. Airways

Hometown: Pittsburgh, PA

Years racing: 10

First R/C car: Tamiya Hornet

Favorite class: $\frac{1}{12}$ -scale carpet on-road

Favorite track: Ripon R/C Speedway (California)

Favorite race: U.S. Indoor Champs (Cleveland)

Sponsors: GM Racing, Yokomo, Jaco, Team

Associated, Pro-Line and KO Propo



Radio Control Car Action: Jon, I always see you competing at larger on-road races, and you always seem to finish very well. What's your secret?

Jon Orr: I usually have a game plan going into the main event, so I know what I will need to do to be most successful. First and foremost, I try not to get into a wreck on the first lap of the main event. I learned a long time ago that you cannot win the race on the first lap.

RCCA: Your GM-powered Associated and Yokomo cars are always fast. How much practice time do you need on a particular track to get your car dialed in so you feel comfortable with the layout?

JO: Generally, I would have to say that it takes me about three to five runs to get used to a track, and sometimes more, in the case of sedans.

RCCA: Tires are the single most important factor in on-road racing, and some people believe that many times, championships are won as a result of using prototype tires that are unavailable to the other drivers competing for the same championship. In your opinion, is this kind of racing healthy for the sport? Also, what is your take on having mandatory control or spec tires at major racing events?

JO: I don't think that prototype tires play an important role in $\frac{1}{12}$ - and $\frac{1}{10}$ -scale on-road racing, but touring-car racing is another subject. I'm a big supporter of using control, or spec, tires at major sedan races. I feel that it's possible to divide the major races among the major tire manufacturers who would like to participate in this great cause. This would keep down the cost of racing for both the consumer and the racing teams.

RCCA: I'm with you, Jon; controlled tires make a lot of sense. How long have you been racing under the GM banner, and how is the partnership working out?

JO: I've been racing for GM since March '98. To be perfectly honest, I don't think I could ask for any more in a sponsor from a competitive standpoint. GM has supplied me with the equipment I need to gain the competitive edge.

RCCA: $\frac{1}{12}$ - and $\frac{1}{10}$ -scale 2WD pan cars require precision driving and a highly trained throttle finger to be competitive in a heat race.

In your opinion, how does on-road racing differ in terms of driving strategy, throttle and brake control, etc., from 4WD touring-car racing?

JO: Brakes are not necessary on $\frac{1}{12}$ - and $\frac{1}{10}$ -scale pan cars, if the vehicle is set up properly. And yes; pan cars require a trained throttle finger. Sedans, on the other hand, require a slightly different approach. Basically, you drive punched out of your mind from the moment the horn sounds.

RCCA: Maybe that has something to do with why a reasonable amount of hacking is acceptable in touring-car racing. What has been your most memorable racing experience?

JO: There have been several, but my most memorable experience would have to be my first major win. It was at the Cleveland Indoor Championships where I ended up chasing Joel Johnson down for seven minutes and passed him on the final straightaway after his batteries dumped. I will always remember that ballroom and how the crowd was going nuts!

RCCA: That must have been an awesome feeling. I'm thrilled when I finish third or better in the B-main at a club race! So tell me, do you compete in—or are you interested in—any other types of sporting events?

JO: I pretty much enjoy all major sports, especially football and hockey.

RCCA: Are there any particular people that you look up to or who possibly had an impact on your racing career?

JO: Frank Calandra and Bob Schoenaou had an impact on the early part of my career. I'd also like to mention Mike Reedy, who helped during the later part, and of course, I'd like to give my boys at GM some recognition: Hodge, Scooter, Ralf and Gunther have been awesome.

RCCA: Are you chasing any particular goals?

JO: My biggest goal is to win a world championship.

RCCA: I'm sure a world title will soon become a reality for you. Thanks for your time, Jon; I hope to see you at one of the next big races.

*Addresses are listed alphabetically in the Index of Manufacturers on page 209.

ROAR

OFF-ROAD MODIFIED ELECTRIC

NATS

BY GEORGE M. GONZALEZ

When I arrived at M-n-M Hobbies in Corona, CA, for the ROAR Off-Road Modified Electric Nationals, I was greeted by a less than full parking lot, and I briefly thought I had arrived on the wrong weekend. When I entered the facility, however, I noticed that many of the factory team drivers were already hard at work setting up their vehicles for the third round of qualifying.

On paper, attendance was impressive—more than 255 entries, and all the top team drivers were in attendance. I expected a crowd and a full parking lot, but nearly half of the contestants were entered in several classes, and this inflated the total. Actually, fewer than 150 racers competed—one of the lowest turnouts in recent ROAR history. However, the racing action was every bit as exciting as any of the previous national championships I attended, and the racing schedule ran at an accelerated pace, so that racers went home at a reasonable time each day.

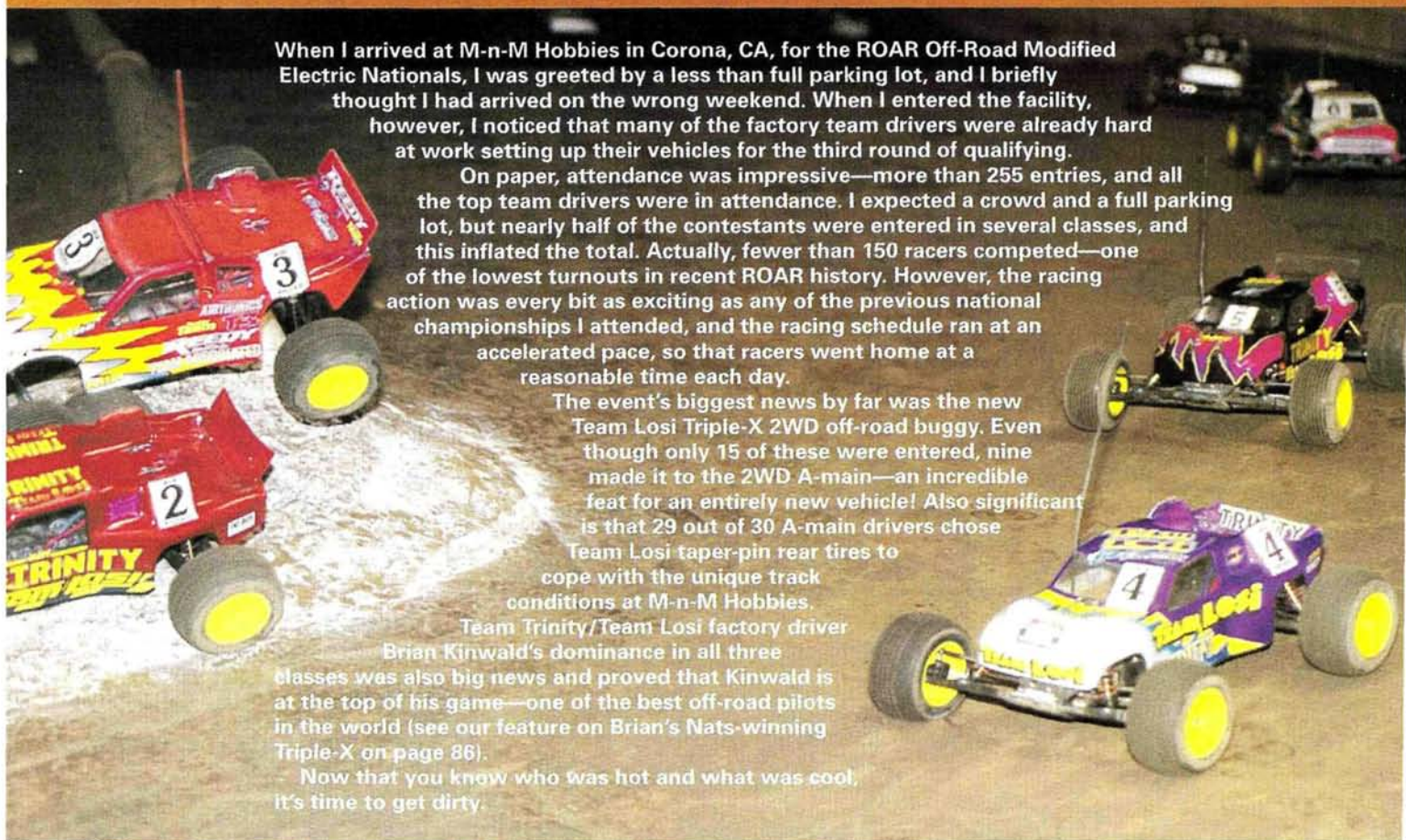
The event's biggest news by far was the new Team Losi Triple-X 2WD off-road buggy. Even though only 15 of these were entered, nine made it to the 2WD A-main—an incredible feat for an entirely new vehicle! Also significant is that 29 out of 30 A-main drivers chose Team Losi taper-pin rear tires to

cope with the unique track conditions at M-n-M Hobbies.

Team Trinity/Team Losi factory driver

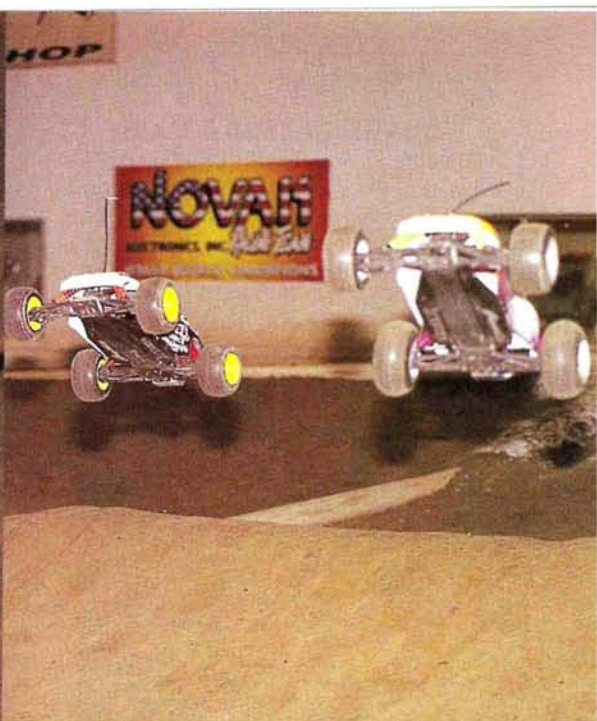
Brian Kinwald's dominance in all three classes was also big news and proved that Kinwald is at the top of his game—one of the best off-road pilots in the world (see our feature on Brian's Nats-winning Triple-X on page 86).

Now that you know who was hot and what was cool, it's time to get dirty.



Leslie Frank made the trophy presentation almost as popular as the race itself. She gets my vote for "prettiest presenter" at an R/C race.





TRIPLE WINS FOR THE TRIPLE-X

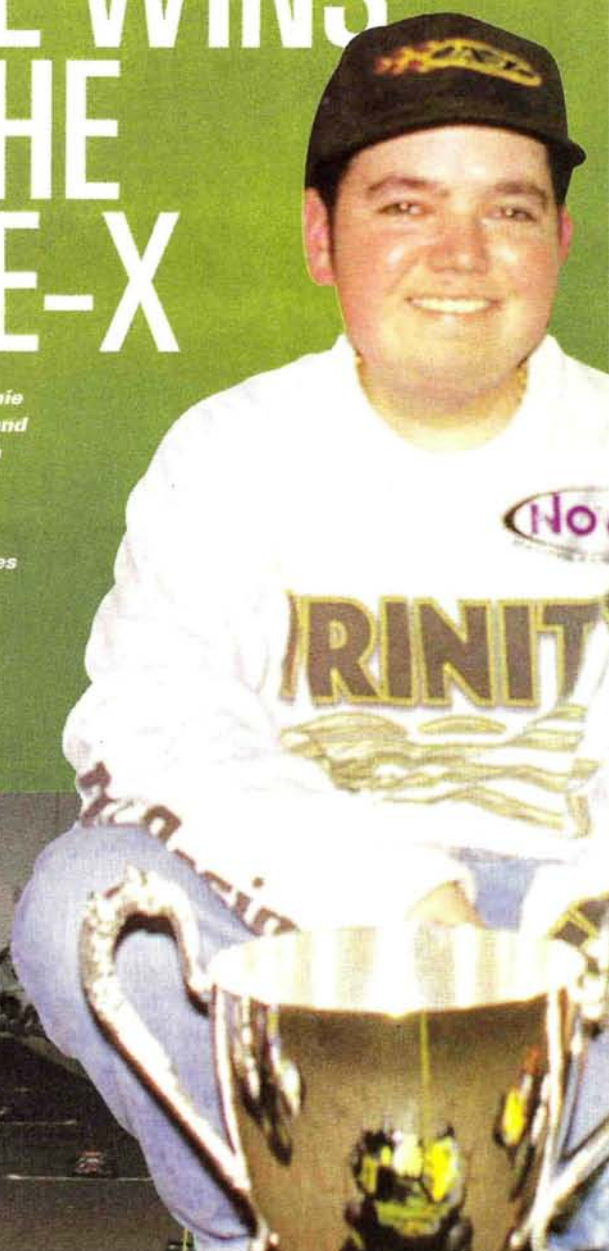
Above left: Gil Losi Jr. and Ernie Provetti (president of Trinity and co-owner of Team Losi) have a private conversation—until I showed up with my camera.

Left: "Pops" Losi congratulates his team on their fantastic performance.

Right: Brian Kinwald is a happy champion!



PHOTOS BY GEORGE AL GONZALEZ



QUALIFYING AND A-MAIN

Four qualifying rounds and three triple A-mains determined the winners in all three classes. The racers earned points according to how they finished in each qualifier, and the driver with the lowest score was the TQ. This new scoring system was adopted by ROAR to eliminate "rocket-round" qualifying. A-main drivers then competed in three mains to determine the winner. The driver with the highest score was awarded the national championship.



The fabulous Barry Baker can't resist a plugged-in microphone: Barry is a very enthusiastic announcer who provides colorful commentary.

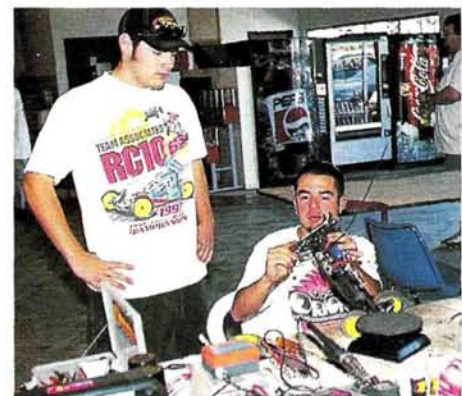


Mark Pavidis didn't have the best luck at the Nats, but he's always a force to be reckoned with.

2WD—by far the largest class and possibly the most exciting. Brian Kinwald was the man to beat, and he was unstoppable. He easily picked up the TQ with his second-best time that was 3 seconds faster than his teammate Matt Francis's, his closest competitor. Greg Hodapp, Billy Easton, Todd Hodge, Chad Phillips, Jason Coral, Mark Francis, Travis Amezcua and Rick Hohwart qualified third through 10th, respectively. Nine out of the 10 cars that qualified for the A-main were brand-new Team Losi Triple-X buggies. Talk about a sweep!

Brian Kinwald literally smoked his competition during the Mains. He won the first two with a giant 5-second mar-

gin and secured the championship for Trinity/Team Losi. It was the first big win for the new Triple-X buggy and an important win for Kinwald and Losi/Trinity. Matt Francis secured the second-place trophy by placing second in one Main and first in the third. Team Associated factory driver Billy Easton picked up third (for second- and third-place finishes). I'm sure that the Team Associated camp was pleased that Easton stopped Team Losi from taking the top three spots in the 2WD class at the Nats.



Team Associated's Daryl Silva checks out Travis Amezcua's new Team Losi Triple-X buggy. What do you think, Daryl?

THE ULTIMATE PIT SP



When you pull up the Team Serpent Network web site you pull into gas racing's ultimate pit space. Browse the on-line version of our 80-page, 200-photo Tech Book – a virtual gas car bible that puts 20 years of tuning know-how at your fingertips. Join the Cyber-Pit, a unique interactive web page where racers from around the world share tech information. Download our exclusive START datalogging software...for free. Or read the latest tuning tips in columns by the current World T.Q., the ROAR Champion, and other experts. TSN – get it dialed up, and get your car dialed in.

4WD—although it had the fewest contestants, it was the fastest class, and the air time was endless. Brian Kinwald was a force here also, and he was the only driver to put in a 13-lap run to take the TQ with his Losi Double-X4. Greg Hodapp, Scott Brown, Todd Hodge, Jordon Musser, Mark Francis, Rick Hohwart, Mark Pavidis, Travis Amezcua and Brian Dunbar all made the grade and qualified second through 10th, respectively. It was a Team Losi sweep in this class, too, and nine of the 10 qualifiers were Double-X4 buggies.

Kinwald's repeat performance in 4WD and his win of the first two Mains secured him the 4WD Mod National Championship. He was more than 6 seconds faster in each Main than his nearest competitor—nearly half a lap faster! Greg Hodapp placed second twice, and he took a win in the third Main to secure the second-place trophy. Scott Brown, also driving a Team Losi Double-X4, placed third—a 1-2-3 sweep for Team Losi.

Truck—no surprise; it was all Kinwald here. The TQ didn't come easily for him, however; he logged in a decent time in the first round, DNF'ed the second and then secured the TQ, taking the honor away from his teammate Matt Francis, who had the pole position until the third round. Kinwald logged

Another point of view

The ROAR Off-Road Modified Electric Nationals is one of the most highly anticipated events of the season. It awards three national championship titles to the winners of 2WD, 4WD and Mod Truck classes. Last year's event in Chicago, IL, enjoyed a large turnout—450 entries—one of the largest ROAR Nationals ever.

So, how did we go from record high to record low attendance in just one year? Some believe that the low turnout had something to do with the location: Southern California happens to be home to many top R/C drivers. The

argument is, how can you expect to do well at an event where you compete against a field of sponsored and factory drivers who have personal mechanics and enormous team support and who are not weary from traveling long distances. This is a compelling argument because nearly two thirds of the 140 or so drivers who competed this year were sponsored or factory team drivers.

Chicago's Midwest location is more accessible; many contestants drove only a couple of hours to get there. Most non-resident contestants had to fly into Southern California—an expensive deterrent, and quite possibly the main reason numbers were down this year.

A couple of ideas that I've picked up along my travels might help to increase the turnout at large events. These ideas are not original, however, and are actually far from unique.

1. Create separate factory/expert and sportsman classes just like NORRCA offers at its national championship. Factory team and sponsored expert drivers compete in the factory class against other team and expert drivers. But the sportsman class should be open only to independent drivers, i.e., not sponsored in any way. Also, the racers in sportsman would have to qualify for the right to compete at the Nationals based on past performance at ROAR regional events.

2. Do away with qualifying heats altogether. Racers could compete in several heat races and receive points according to how they finished. After the first round, the computer can calculate the drivers' best lap times and group those with similar times. The subsequent heat races can be reshuffled to ensure that each heat represents drivers of equal driving skill. When all the designated heats are over, the racer with the best combined score wins the event. This, basically, is the system adopted by the Tamiya Championship Series, and it works extremely well.

Do you have any interesting ideas on how to make large events more fun, more fair and more successful? Drop me a line: georgeg@airage.com. My email line is always open.

an even faster time in the fourth round, and that clinched it! Billy Easton, Greg Hodapp, Mark Francis, Scott Brown,

Sohrab Tavakoli, Rick Hohwart, Travis Amezcua and Chad Bradley also qualified for the A-main in the order given.

CE IS IN CYBERSPACE



www.serpent.nl

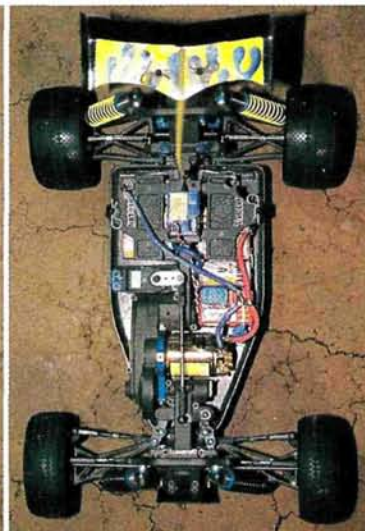
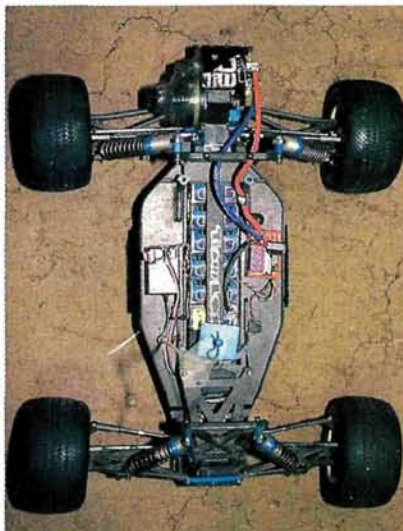
Serpent
EXCITEMENT IN THE FAST LANE

ROAR MOD NATS

Left to right: the great Kinwaldo's Mod Nats-winning Trinity-powered Team Losi Triple-X—by far the fastest car at the Nats.

Kinwald's bad-to-the-bone Team Losi Double-XT GP. The only view most drivers had of this truck was of its tailgate!

Another Kinwald ride. His Losi Double-X4 stayed shiny side up throughout and finished in front when it counted the most.



WINNERS

2WD MOD

Fin.	Qual.	Driver	Chassis	Motor	Battery	ESC	Radio	Body	Tires(F/R)
1	1	Brian Kinwald	Losi Triple-X	Trinity D3.5 12x2	Trinity	Novak Atom	Airtronics M8	Losi	Losi/Losi
2	2	Matt Francis	Losi Triple-X	Trinity D3.5 13x2	Trinity	LRP IPC V6	Airtronics M8	Losi	Losi/Losi
3	4	Billy Easton	Associated B3	Reedy 10x2	Reedy	LRP IPC V6	Airtronics M8	Pro-Line	Losi/Losi
4	6	Chad Phillips	Losi Triple-X	Trinity	Trinity	Novak Cyclone	Airtronics M8	Losi	Losi/Losi
5	3	Greg Hodapp	Losi Triple-X	Trinity D3.5 12x2	Trinity	Novak Cyclone	Airtronics M8	Losi	Losi/Losi
6	10	Rick Hohwart	Losi Triple-X	Peak 12x2	Peak	Novak Cyclone	Airtronics M8	Losi	Losi/Losi
7	5	Todd Hodge	Losi Triple-X	GM EV03 13x4	GM	GM V12	Airtronics M8	Losi	Losi/Losi
8	9	Travis Amezcua	Losi Triple-X	Team Orion 11x2	Team Orion	Novak Cyclone	Airtronics M8	Losi	Losi/Losi
9	7	Jason Coral	Losi Triple-X	Trinity 12x2	Trinity	LRP IPC V6	Airtronics M8	Losi	Losi/Losi
10	8	Mark Francis	Losi Triple-X	Trinity	Trinity	Novak	Airtronics M8	Losi	Losi/Losi

4WD

1	1	Brian Kinwald	Losi XX4	Trinity D3.5 11x3	Trinity	Novak Cyclone	Airtronics M8	Losi	Losi/Losi
2	2	Greg Hodapp	Losi XX4	Trinity D3.5 10x4	Trinity	Novak Cyclone	Airtronics M8	Losi	Losi/Losi
3	3	Scott Brown	Losi XX4	Trinity D3 11x5	Trinity	Novak Cyclone	JR R1	Losi H/W	Losi/Losi
4	6	Mark Francis	Losi XX4	Trinity	Trinity	Novak	Airtronics M8	Losi	Losi/Losi
5	5	Jordan Musser	Losi XX4	GM 11x2	GM	GM V12	Airtronics 3PS	Losi	Losi/Losi
6	9	Travis Amezcua	Losi XX4	Team Orion	Team Orion	Novak	Airtronics M8	Losi	Losi/Losi
7	4	Todd Hodge	Losi XX4	GM EV03 10x2	GM	GM V12	Airtronics M8	Losi	Losi/Losi
8	10	Brian Dunbar	Losi XX4	GM EVO3 11x2	GM	GM V12	Airtronics M8	Losi	Losi/Losi
9	7	Rick Hohwart	Losi XX4	Peak 11x3	Peak	Novak Cyclone	Futaba 3PJ	Losi	Losi/Losi
10	8	Mark Pavidis	Yokomo MX-4	Reedy 10x2	Reedy	LRP IPC V6	Airtronics M8	Yokomo	Pro-Line/Pro-Line

MOD TRUCK

1	1	Brian Kinwald	Losi XXT	Trinity D3.5 10x2	Trinity	Novak Cyclone	Airtronics M8	Losi	Losi/Losi
2	4	Greg Hodapp	Losi XXT	Trinity D3.5 10x3	Trinity	Novak Cyclone	Airtronics M8	Losi	Losi/Losi
3	2	Matt Francis	Losi XXT	Trinity D3.5 12x2	Trinity	LRP IPC V6	Airtronics M8	Losi	Losi/Losi
4	7	Sohrab Tavakoli	Losi XXT	Team Orion	Team Orion	Novak Cyclone	Airtronics M8	Losi	Losi/Losi
5	3	Billy Easton	Associated T3	Reedy 10x2	Reedy	LRP IPC V6	Airtronics M8	Pro-Line	Losi/Losi
6	8	Rick Hohwart	Losi XXT CR GP	Peak 11x3	Peak	Novak Cyclone	Futaba 3PJ	Losi	Losi/Losi
7	9	Travis Amezcua	Losi XXT	Team Orion	Team Orion	Novak	Airtronics M8	Losi	Losi/Losi
8	5	Mark Francis	Losi XXT	Trinity	Trinity	Novak	Airtronics M8	Losi	Losi/Losi
9	10	Chad Bradley	Associated T3	Reedy 10x2	Reedy	LRP V6	Futaba Lynx 3D	Pro-Line	Pro-Line/Losi
10	6	Scott Brown	Losi XXT CR GP	Trinity D3 11x5	Trinity	Novak Cyclone	JR R1	Losi	Losi/Losi

Eight Team Losi Double-XT 'CR's and two Team Associated T3s made up the A-main grid.

You probably guessed it: Brian Kinwald was the guy to beat. Matt Francis was the only driver to finish a race ahead of the great Kinwaldo. The first Main win actually was easy for Francis because Kinwald had a bad start and had to make up a lot of ground just to finish in second. In the second and third Mains, it was all Kinwald; again he stayed in front by a huge margin.

Kinwald's 200 points secured his third national championship of the weekend.

FINAL THOUGHTS

The ROAR Electric Off-Road Modified National Championships was a monumental event despite the turnout. Team Trinity/Team Losi driver Brian Kinwald defeated the best drivers and won every class. It isn't really surprising that he won the 2WD with a new buggy; after all, Team Losi's track record for success speaks for itself. We congratulate Brian Kinwald

and Trinity and Team Losi for their success. Special thanks to Joe Stanovich and the entire staff at M-n-M Hobbies for a fantastic job in orchestrating the event. I cover many races every year, and it's always a pleasure to come back home to M-n-M Hobbies.

Hope to see you all at the Pro-Line/R/C Car Action Endless Summer Classic that will take place around the same time this issue hits the newsstands. ■

THE REEDY INTERNATIONAL TOUR

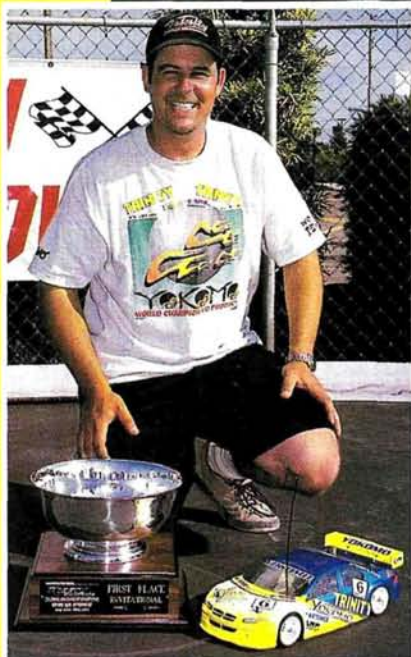
FABULOUS BARRY BAKER TAKES THE CHECKERED FLAG

by George M. Gonzalez

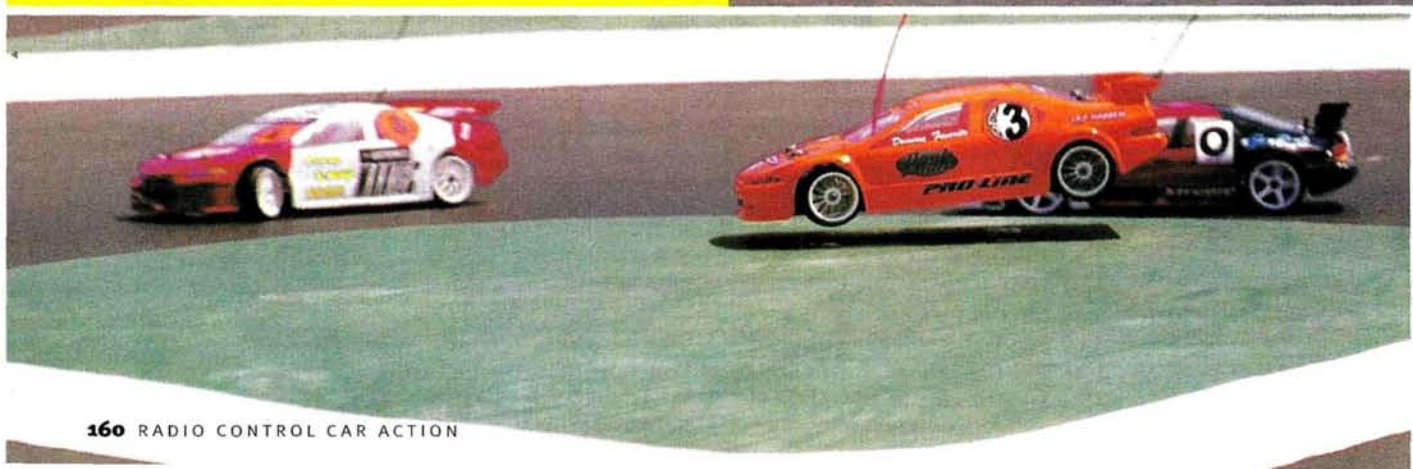
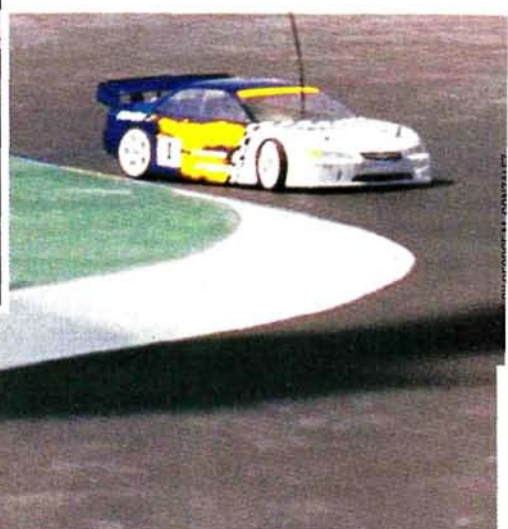
The Reedy International Race of Champions is one of the most popular off-road races of the season. It's also the only large, non-sanctioned racing event at which talented drivers from around the country and around the world are invited to compete in a special Invitational class, with multiple main events and round-robin point scoring determining the outcome. Mike Reedy of Reedy Modifieds has somewhat altered this exciting racing format and now hosts a racing event for touring-car racers only. Not unexpectedly, the first event was an enormous success. Now in its second year, the Reedy International Touring Car Race of Champions has become even more popular than the off-road race after which it was modeled.

Ripon R/C Speedway in Ripon, CA, was the site of the Second Annual Reedy ITC Race; it's one of Northern California's finest permanent, on-road racing facilities. Three racing classes were run throughout the course of the three-day event. The Open Stock and Modified classes were open to all contestants, but the spots sold out very quickly. In typical Reedy Race fashion, a special Invitational class was run, and David Spashett, Masami Hirotsuka, Jukka Steenari, David Jun, Joel Johnson, Barry Baker, Mike Swauger, Josh Cyrul and Mark Pavidis—racing's crème de la crème—were all there!

Kyosho, Tamiya, HPI and Yokomo flew in racing teams from Japan to join their American teammates, while Trinity/Team Losi imported racers from as far away as England and Finland to support its all-star U.S. team. Schumacher, CEN and just about every motor and battery manufacturer under the sun were present and fielded teams, all of which were gunning for a Reedy Race championship.



Champion Barry Baker was the most dialed by far.



ING CAR RACE OF CHAMPIONS



OPEN CLASS ACTION

Four qualifying rounds in each of the Open class competitions established the grid order for the single, decisive A-main event, and all of the contestants in the Stock class used handout Reedy Rage motors. The Open and Mod class champions are automatically invited to compete in the Invitational at the next Reedy TC Race, so plenty of fender rubbing (aka "hacking") occurred, to the delight of the spectators.

• **Open Stock.** Team HPI/Tekin driver Tony Phalen set the pace early in the Stock Touring class and earned the top qualifier position on the A-main grid by edging out Team Losi driver Richard Trujillo by nearly 1 second.

Tony Phalen shot out in front at the start of the A-main with Eric Vasutin and Richard Trujillo, both driving Team Losi vehicles, in tow. After the first lap, however, Trujillo made a pass on Vasutin to claim second behind Phalen. Moments later, while going through one of the corners, Trujillo spun out and nearly lost his position. Luckily, he was able to hold on to second, but Vasutin was back on his tail, and Phalen stretched his lead to nearly half a lap. After a couple of minutes, Trujillo laid down some of the fastest laps recorded at the event and was soon less than five car lengths behind Phalen. Meanwhile, Vasutin was being challenged by Pat McCarson for third place, and several other drivers were also following the leader's pace.

At the halfway mark, Trujillo started pressuring Phalen; their cars got tangled exiting a corner, which raised the tension level but did not change the running order. Trujillo remained

planted directly behind Phalen and continued to apply pressure until Phalen lost his concentration momentarily and rolled his car after tagging a corner dot. Trujillo then led and within seconds was out of sight.

With less than 1 minute left in the race, I shifted my attention to the battle for third that was taking place between Vasutin and McCarson. McCarson used his own brand of pressure on Vasutin, and his tenacity paid off on the last lap of the race. He found a gap large enough to fit his car through and squeezed by to claim third.

Trujillo ended up winning the event by a huge margin, and he also earned a victory lap; this meant that he was the only driver in the Stock class to put in a 20-lap run. That Trujillo established the fastest time of the event during the Main was simply amazing. Top qualifier Phalen had to settle for second, but in my book, that's quite an honor.



Hi, mom! Open Stock class top qualifier Tony Phalen gets a little too close to my camera. Did you have onion rings for lunch, Tony?



The view of the giant, covered, pit area reveals that the contestants were comfortable.

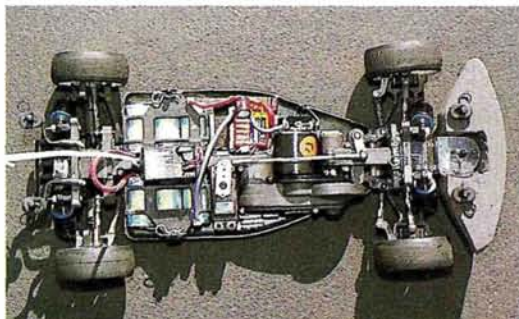
• **Open Modified.** Team Orion/Team Losi driver Jimmy Jacobson, who's better known for his off-road racing antics, secured the pole position in the 4-minute A-main after stealing the TQ from his sponsor, Gil Losi Jr., who was about 3 seconds slower.

TQ Jimmy Jacobson got the holeshot and led Gil Losi Jr., Curtis Schlaht and Dominic Favorito around an amazingly clean first

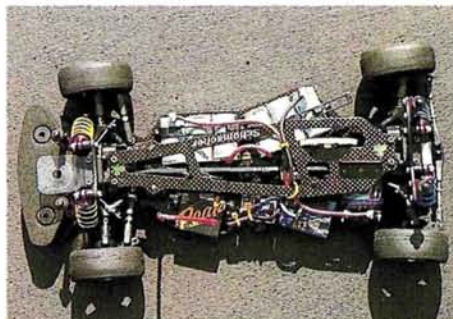
lap. Schlaht soon made a move on Losi to claim second, but Jacobson's purple and silver Losi Street Weapon continued to lead the pack. Going through the chicane section, a scuffle changed the running order considerably, and after six short laps, Jacobson was out of the race because of radio problems. Schlaht took over the lead, but Favorito, Losi Jr. and Eric Vasutin were hot on his tail. On the very last lap, though, Schlaht's car dumped, and this allowed Favorito to take the lead—and the championship. Losi Jr. and Vasutin rolled in less than 1 second later in what appeared to be a photo finish. According to the track computer, however, Vasutin crossed the line $\frac{1}{10}$ second ahead of Losi to capture second place.

THE INVITATIONAL

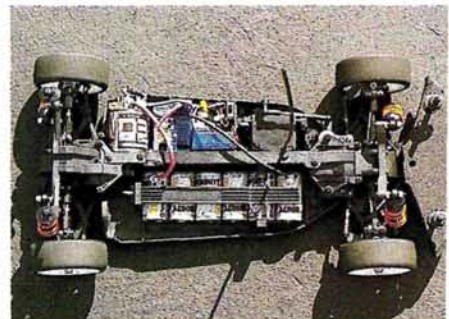
The Invitational class racers competed in eight main events (four rounds on Saturday and four on Sunday), and they had to face a different group of racers in every Main. The drivers earned points according to their finishing positions (first = 1 point, second = 2 points, third = 3 points, etc.), and the driver's best three scores from each day were combined to arrive at a final score. Drivers' worst daily scores were thrown out, and that meant that only six of the eight main events actually counted. Naturally, the driver with the lowest score was declared champion, and the round-robin point-scoring



Richard Trujillo's Open Stock class-winning Street Weapon IWC; basically, the car that's available at your favorite hobby dealer.



Dominic Favorito's Open Mod class-winning Schumacher SST 2000 '99 Pro. This car was on rails!



Barry Baker's not-so-stock Yokomo MR-4TC. This is the second big win for Yokomo's "sport-level" touring car.

system almost guaranteed that many ties would have to be settled at the end.

Team Trinity/Team Yokomo driver Barry Baker was, by far, the most consistent driver; he finished with 6 points (the lowest possible score) to secure the overall Invitational class championship. During his career, Barry has finished in second and third at many major racing events, so it was cool to see him pick up a big win this time. Team Yokomo factory driver Masami Hirosaka's four first-place and two second-place finishes totaled 8 points and was good enough to secure second. Team

HPI/Team Orion driver Masayuki Murai ended up with three first-place, one second-place and two third-place finishes—totaling 11 points—to secure third.

FINAL THOUGHTS

The Second Annual Reedy International Touring Car Race of Champions was a monumental event; one of the largest R/C races I've ever covered. It's also an event that receives a tremendous amount of factory support; to all intents and purposes, the Reedy ITC Race has become as big a deal as the IFMAR International World Cup

(IWC) is, and in this editor's opinion, the Reedy ITC was just as exciting.

My hat is off to Team Trinity/Team Yokomo driver Barry Baker for his fabulous performance. This win improves his standing as a top-level team driver in what has become one of our hobby's most competitive segments. We also thank Mike Reedy for his generous support, and the staff at Ripon R/C Speedway for their excellent management of the event. I hope to see you all there next year. ■

OPEN STOCK

FINISHED	QUALIFIED	DRIVER	CHASSIS	MOTOR	BATTERY	ESC	TIRES	RADIO
1	2	Richard Trujillo	Losi	Handout	Peak	Novak	Pro-Line	Airtronics
2	1	Tony Phalen	HPI	Handout	Orion	Tekin	Yokomo	Airtronics
3	7	Pat McCarson	Schumacher	Handout	Peak	Tekin	Speed Max	Airtronics

OPEN MODIFIED

1	3	Dominic Favorito	Schumacher	Peak	Peak	Novak	Pro-Line	Airtronics
2	7	Eric Vasutin	Losi	Trinity	Trinity	Novak	Pro-Line	KO Propo
3	2	Gil Losi Jr.	Losi	Trinity	Trinity	Novak	Losi	Airtronics

INVITATIONAL

FINISHED	TOTAL POINTS	DRIVER	COUNTRY	TEAM
1	6	Barry Baker	USA	Trinity/Yokomo
2	8	Masami Hirosaka	Japan	Yokomo
3	11	Masayuki Murai	Japan	HPI/Team Orion





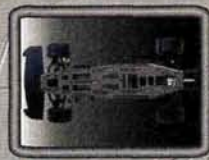
art. 980502 disk brake Pico 1/8
art. 980501 disk brake Serpent



art. 980509 lining Pico 1/8
art. 980501 lining Serpent 1/8, 1/10



art. 980703 Chassis Pico
art. 980701 Chassis Vector 1/8
art. 980702 Chassis Impact M2 1/10



art. 980704 Chassis 1/5 FG-L Collari



art. 980405 Set-up 1/5
art. 980401 Set-up Serpent Pico 1/8
art. 980402 Set-up Serpent Pico 1/10
art. 980403 set-up Inferno 1/8
art. 980404 set-up Touring



art. 980201 for off and on-road 1/8
art. 980202 for off and on-road 1/10

PLEASE REQUIRE THE CATALOGUE OF THE ACCESSORIES AND SPECIAL PARTS TO THE L. COLLARI-INNOTECH COMPANY!!!



art. 980804 Height regulator 1/5
art. 980803 Height regulator 1/8



art. 980301 Stabilizer rod holder for Serpent 1/10 and 1/8



art. 980305 FG Stabilizer bar 1/5



art. 980602 Universal spoiler for bodies 1/8



art. 980905 Fuel gun



art. 980911 Fuel 5 l. 25% nitro

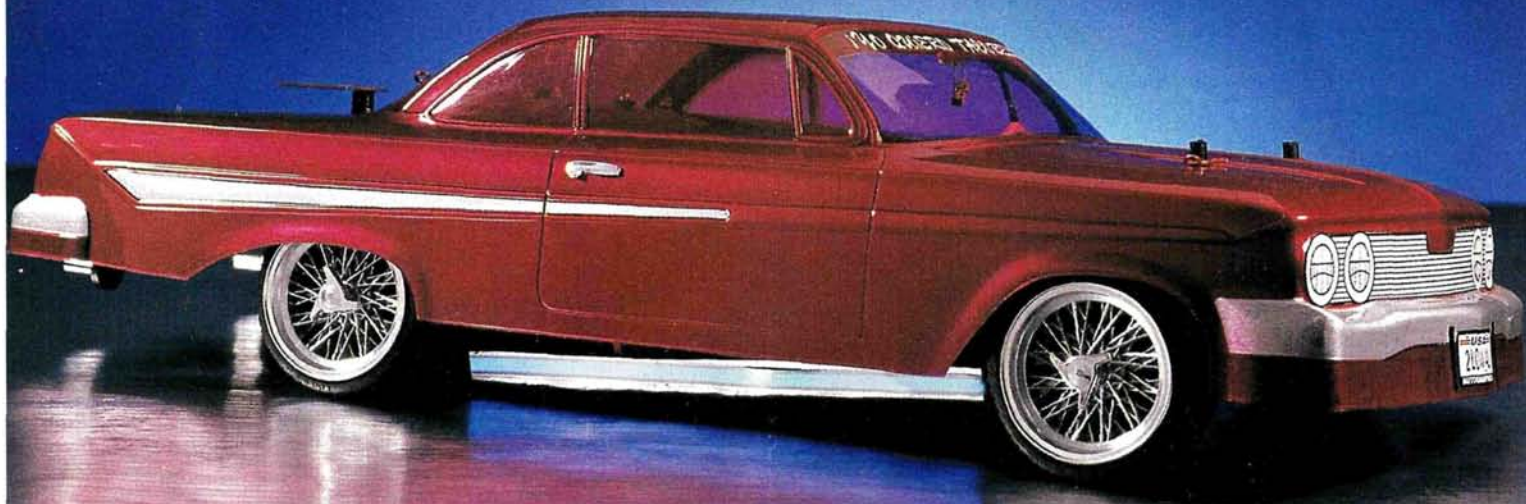
L. COLLARI-INNOTECH via Morbidina, 2 - 41012 Carpi (Modena) ITALY
Tel. 0039.059.646600 - Fax 0039.059.6466030 - Internet site: www.lcollari-innotech.com

HOME BUILT PROJECT

by Paul Conrad

It's not hard to drop a slammed Impala body onto a chassis and call it a lowrider, but building a functional chassis that actually has the power to hop from side to side and even do a three-wheel crawl is a whole 'nother story. It's just the sort of R/C toy I like to play with, so I decided to take on the challenge and build a lowrider of my own complete with "hydraulics"—sort of. Here's how I did it.

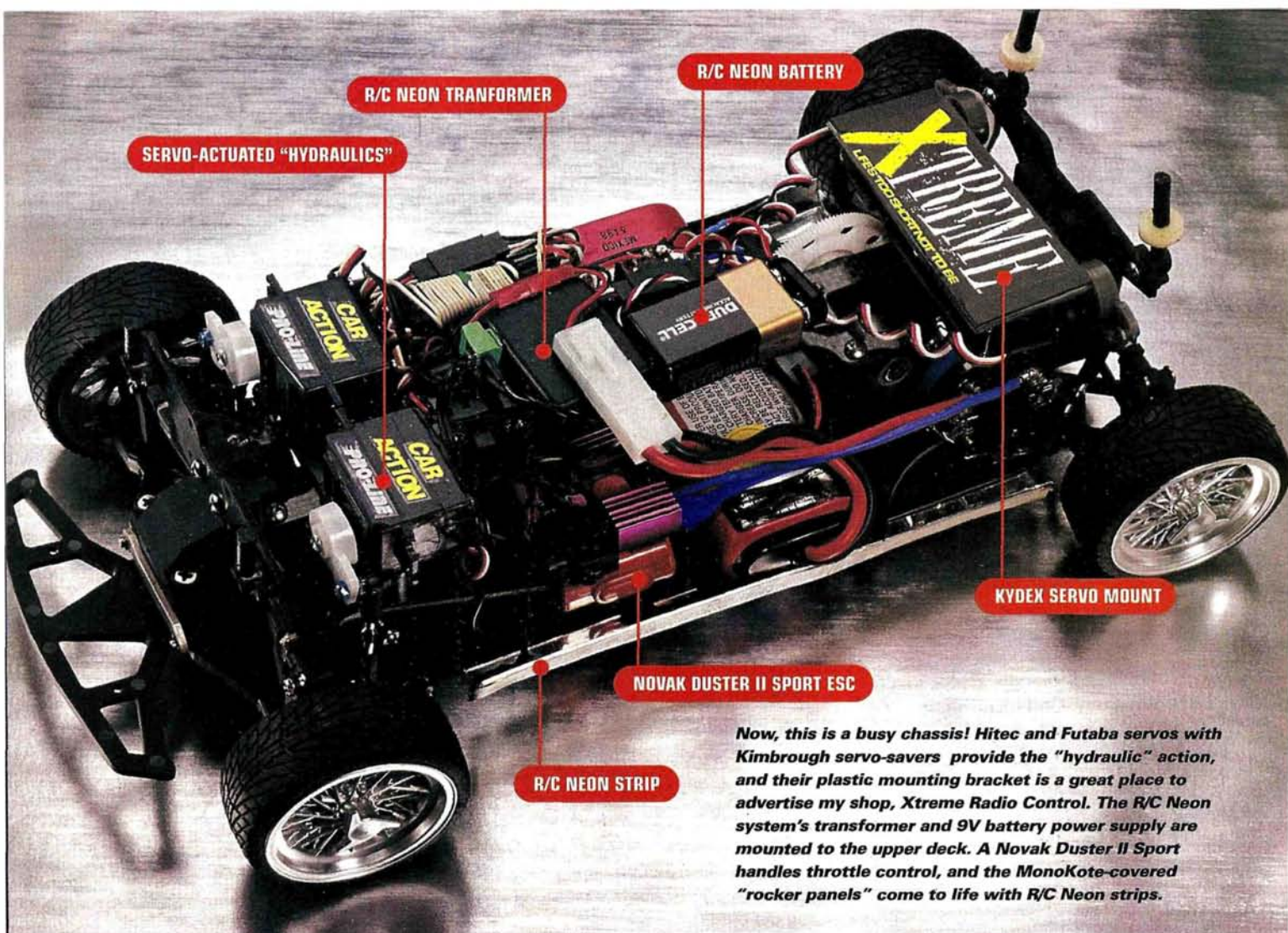
HOW LOW CAN YOU GO?



Hit the three-wheel motion! The lowrider can be tweaked from the radio as you drive.

LOW





BRIDE



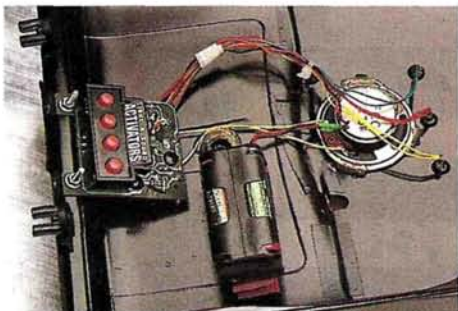
HOME BUILT PROJECT

SQUARE ONE

I decided on an OFNA* Z-10 electric touring-car chassis as the starting point because its fully independent suspension allows plenty of wheel travel. I removed all four shocks and considered replacing them with the Robart air cylinders usually used for R/C airplane landing gear—the closest thing to hydraulics in R/C. Instead, I activated the suspension with Futaba* 132H and Hitec* HS101 servos because the hopping action and constant motion required to drive the car like a real lowrider would quickly bleed off the air supply required for use of the Robart system. An added servo-setup benefit is that you can install a Kimbrough* servo-saver on each servo to act as a suspension spring.

GETTING IT TOGETHER

Having sorted out the basic concept, I had to figure out how to install the four servos (one for each wheel). I made two 3x1-inch brackets from Kydex sheet (available from plastic supply stores). The brackets are basically shelves that each hold two servos so that their output shafts are positioned over the suspension arms. Steel 4-40 screws hold

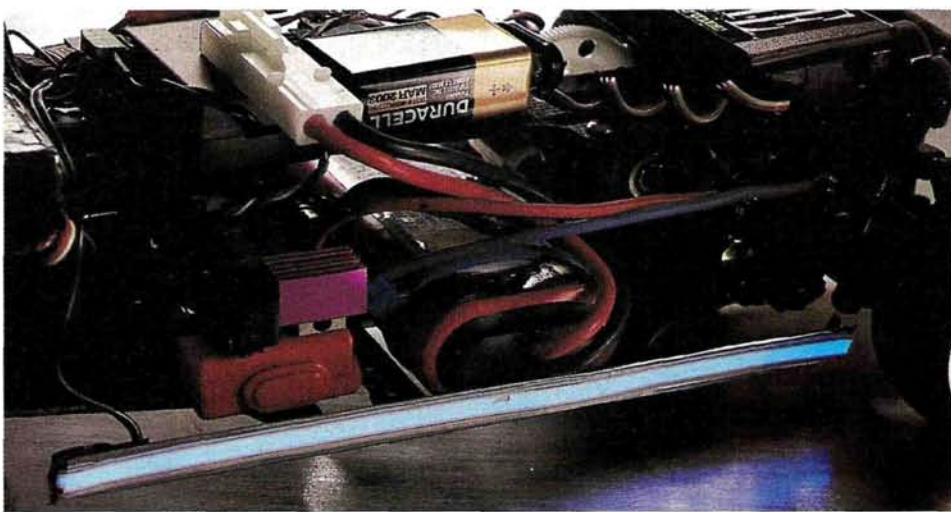


A toy lowrider donated this "sound system."

the brackets to the Z-10's upper deck, and the servos are simply taped into place. I mounted the 132H servos up front because they have the speed and torque it takes to get some exciting action out of the front end, while the HS101 servos were mounted in the rear to manipulate the rear of the car up and down during a three-wheel crawl. Four 1½-inch titanium rods with short Associated* ball cups link the suspension arms to the Kimbrough servo-savers. I didn't have to modify the Z-10's arms to install them; all I had to do was to screw ball studs into the existing holes.

RADIO RIGGING

My lowrider was ready to hop—almost. A simple, 2-channel car radio would not support the "hydraulic" functions, so the search was on for a 6-channel radio that



R/C Neon strips add some glow power to the car.



The Kimbrough servo-savers supply a bit of suspension action and prevent hard knocks from damaging the servos.

would do the job. I needed six channels because four are used for hopping, one for steering and another for throttle. Unfortunately, 6-channel surface radios are hard to come by. I ultimately solved the radio problem by converting a 72MHz Futaba Conquest AM airplane radio to 75MHz (I sent the radio to Futaba for the retune). Last, I installed a Novak* Duster II ESC and competition stock motor.

IMPALA IMPULSES

When the chassis was ready for movement and action, the car needed the perfect body. Hmmm; how about Bolink's* '64 Impala? Yeah, baby! That's the one. I painted its shell Pactra* Candy Red with silver accents and, boy, that sure does it justice. I added a touch of realism by installing an 1/8-scale model rearview mirror and fuzzy dice to the front windshield.

To hide all the electronics, I needed to come up with a shallow but realistic interior, so I cut a piece of Lexan to fit the interior exactly and painted it red. I then cut a small length of 14-gauge wire (red, of course), bent it into a half circle to form a steering wheel and mounted it in the Lexan "interior."

Red paint for that transparent look, installed RPM* Slim Twinz exhaust tips and Kyosho's wire-mesh wheels with Pro-Line* Road Rage tires to complete the hopper. This thing rocks—literally!

At this point, I thought my project was complete, but then I found a toy lowrider that made electronic engine and alarm sounds and also played the melody to "Lowrider" by the seminal 70's band, War; I knew I had to add these electronic noise-makers to my R/C machine. I Shoe-Goo'd the speaker to the underside of the interior tray, used hook-and-loop tape to secure a 4-cell AA battery box to power the electronics and screwed the circuit board/button panel to the rear bumper. Now my R/C lowrider was complete. Yo quiero Taco Bell!

*Addresses are listed alphabetically in the Index of Manufacturers on page 209.

HOW TO Rebuild your Off-Road Suspension

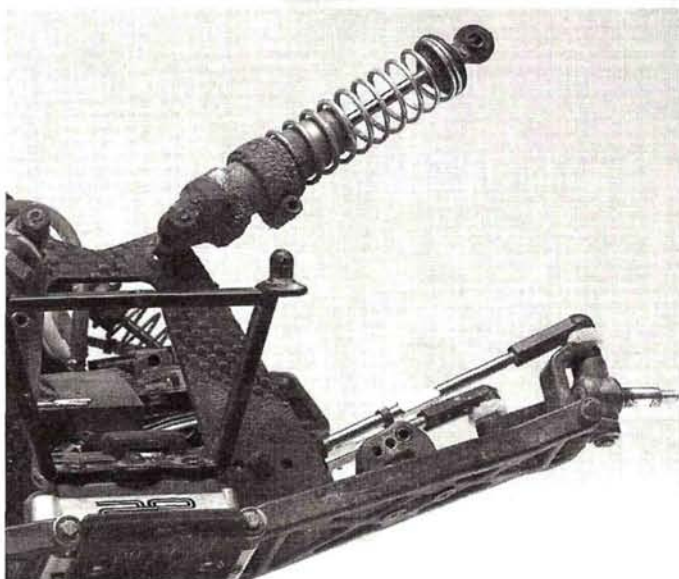
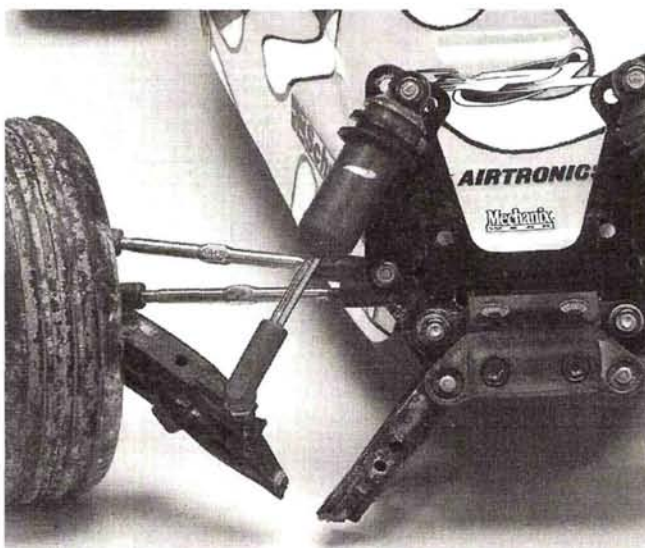
by the Staff of *R/C Car Action*

HAS YOUR TRUCK or buggy lost that planted feel it had when you first built it? Are the washboard and rhythm sections getting your machine out of shape no matter which type of oil and springs you outfit your shocks with? Sounds as if your race vehicle is due for a suspension rebuild. Practice, play, racing and the occasional crash all take their toll on those vital suspension parts, but most of us just ignore this area while we worry about tuning engines or tweaking motors. Take my word for it: the time you spend on tuning your vehicle's suspension can be subtracted directly from your lap times. Here's how to do it right.

INSPECTION

The most important vehicle maintenance tool is your eyesight! Take the time to look your car over after each run to check for damaged and broken parts that could sideline your car in the next heat (particularly if you had a crash or two). Inspect the suspension arms, pivots and hubs. A crack can be anything from a hairline fracture to a very obvious break. It goes without saying that any cracked piece should be replaced.

If everything looks OK, remove the shocks. Raise the suspension arm to its maximum up-travel position, and let it go. If all is working properly, the suspension should drop under its own weight. If it does, you're ready to move on to the shocks; if it doesn't, you have binding problems. Keep reading.



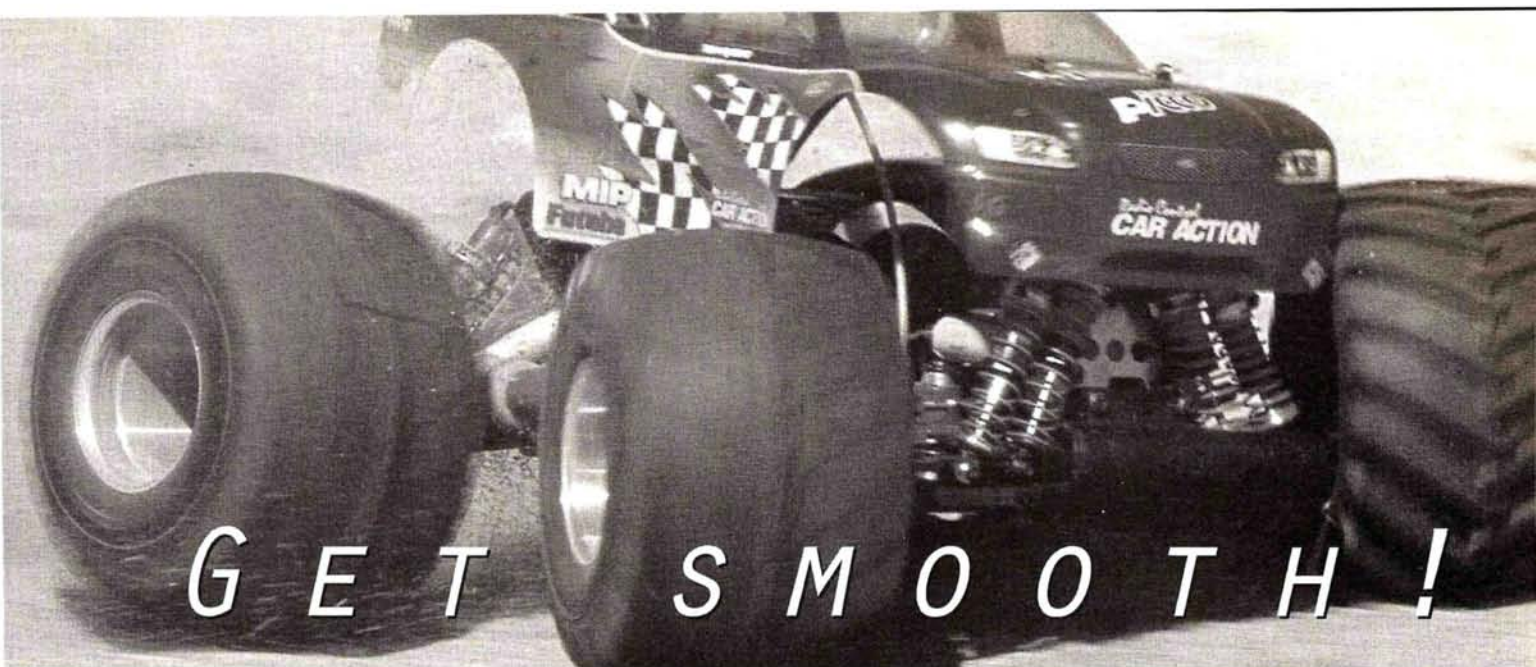
Above: Ouch! This Fireblade took a colossal hit; it was lucky to suffer only a broken arm! There's more to this shot than the obvious breakage, however; notice the gouge in the shock that suggests an impact that may have been strong enough to bend the shock shaft and/or deform the shock bore. This shock should definitely be rebuilt. Left: this RC10T3 needs help! The arm and shock both bind, and the crud around the shock cap is a good indication that oil is seeping out around the cap.

DE-BINDING

- Pull all the pins out of the suspension.
- Roll each pin on a flat, smooth surface (a pane of glass is ideal). If any of the pins wobble at all, replace them. A perfectly straight pin will roll straight without wobbling.
- Next, inspect the hinge pins for tarnish or a coating of fine dirt. If the pins have a matte finish instead of the shine they had when new, you should clean and polish them. To remove the dirt, roll the pins in a rag sprayed with motor spray, then polish them with metal polish. Put a dab of polish on the pin and rub it with a rag, or put the pin in a Dremel tool and turn it while holding the rag with polish against it. If you use a Dremel tool, be careful not to get the rag caught on the spinning pin.



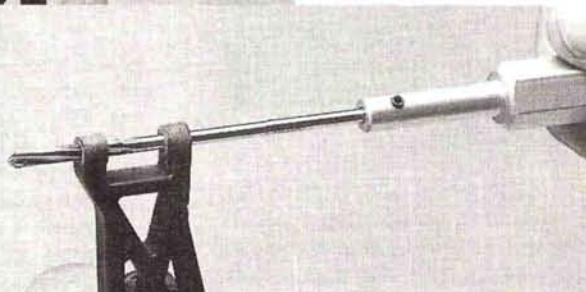
The usable pins are polished to ensure smooth operation (any fine metal polish will do the trick).



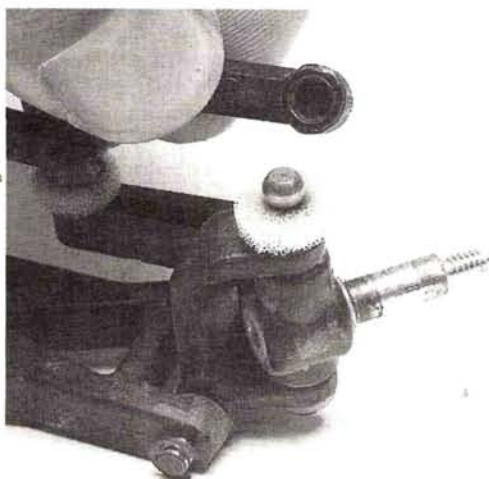
GET SMOOTH!



A pipe cleaner is handy for light cleaning, but sometimes, you need something "extra." Here, an 1/8-inch Trinity reamer is used to clean out the arm.



- Check the ball cups; their open ends can get filled with dirt, and that can cause binding. Clean them with a swab that has a little motor spray on its tip. Stick the swab into the ball cup, and twist it until you're sure that the cup is clean. You should also wipe the ball studs clean with a rag before you snap the ball ends back into place. The tiny foam donuts included with Team Losi* and Associated* kits to prevent grit from entering the ball cups are effective; use 'em.



- Reassemble the suspension and do the arm-drop test again. You should have a friction-free setup.

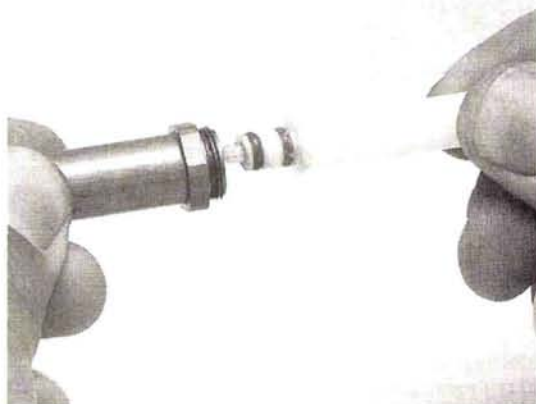
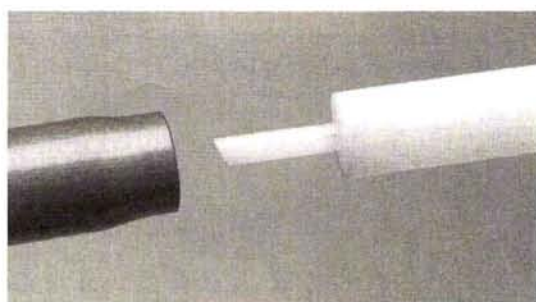
These little "donuts" will prevent dirt from entering the cups. They cost next to nothing, so there's no excuse for not using them.

SHOCK TUNE-UP

With the suspension arms taken care of, it's time to look at the shocks.

- First look for obvious signs of wear; leaking shock fluid is the most obvious sign. If the shaft is wet, the seals have probably failed and must be replaced. Depending on which type of shock you have, you'll need to do the following:

- **Associated shocks.** These require a special tool that's included with Associated kits to remove the seal assembly. If you've lost yours, any racer who runs Associated vehicles will probably have at least one he's willing to lend you.



This tool is required to pop out the Associated seal assembly and is also used to reinstall it.

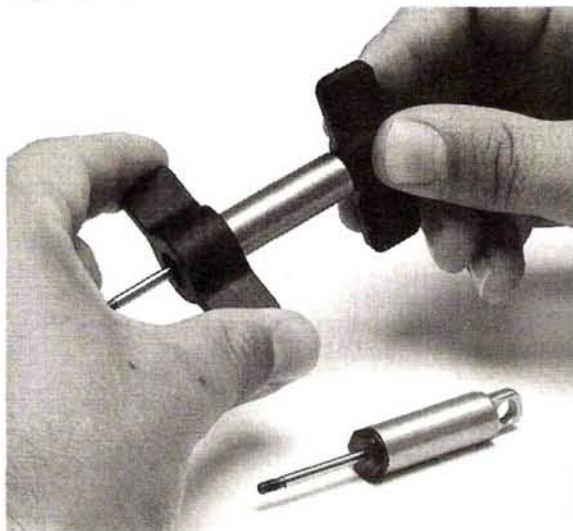
HOW TO REBUILD YOUR OFF-ROAD SUSPENSION

• Team Losi shocks.

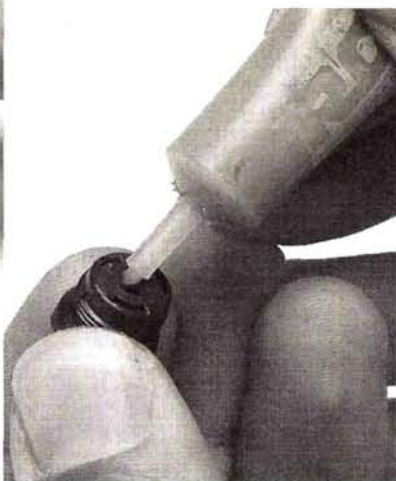
The sealed cartridge can easily be unscrewed from the shock body, but you'll have to pop open the cartridge to get at the seals, so why not replace the entire cartridge? They're cheap, and you won't have to worry about damaging or weakening the cartridge by prying it open.



Although Team Losi sealed cartridges can be popped open for O-ring replacement, it's easier to simply replace the cartridges; they aren't expensive. RPM's shock tools are helpful.



Associated Green Slime will help protect the O-rings during assembly and allow the shocks to operate more smoothly.



• **HPI shocks.** To reach the O-rings, you must pry off the snap-on seal-retainer cap. The cap can be reused, but I prefer to install a fresh one, just to be sure it will hold tight.



These shock seals are held in with a wire clip that's generally replaced when the shocks are rebuilt.

there are significant signs of wear, replace these parts or they won't operate consistently.

If all is well, rebuild the shocks with a kit from your vehicle's manufacturer. Before installing the O-rings, coat them with a little Associated Green Slime; this will help to prevent the threaded end of the shock shaft from damaging the O-rings as you rebuild the shock, and it will reduce "stiction" once the shock has been assembled. For the ultimate in performance, try premium O-rings such as those offered by MIP* and Acer Racing*.

• **Shock shafts.** Check that they're straight with the rolling-across-glass trick, and junk any bent ones. You'll probably notice that the bright finish the shafts had when they were new is now dull and scuffed. This is inevitable, but it's easily remedied: polish the shafts as you polished the hinge pins. If the shafts are at all gouged, don't try to reuse them; even if the gouge doesn't tear up the seals (and it almost certainly will), it will act as a channel through which the shock fluid will flow out. Replace it. To extend the time between rebuilds, upgrade to titanium-nitride shafts such as those offered by MIP and Team Losi. Their hard, slippery coating lasts longer and presents less friction than plated shafts.

REASSEMBLY TIME

Now you're ready to reassemble and refill the shocks. To save time when filling the shocks, fill them only halfway, then compress the shock shafts to release any itty-bitty air bubbles. Since the bubbles have less fluid to travel through, they'll reach the surface much more quickly. Once all the bubbles are out, add the rest of the shock fluid by drizzling it down the side of the shock body instead of squirting it in; that way, you won't create any additional bubbles.

Before you reinstall the rebuilt shocks, check the pivots to make sure that they are clean and pivot freely (if they're dirty, use the cleaning methods described previously). When bolting the shocks to the car, don't tighten the screws and nuts too tightly. Tighten them until the shock is held firmly but still pivots freely.

Keep an eye on those clamping preload collars as well; they might have stretched with use and might slide up the shock body, even when the screws have been fully tightened. Once the suspension has been properly adjusted, some racers put a dot of CA on the collars to prevent them from moving.

ALIGN IT!

When you've reassembled the suspension and it works without binding, check toe and camber angles and ride height. You can do this easily and accurately with an RPM* camber gauge. For accuracy, measure camber with just the bare rims mounted on the car. This will prevent the tires' sidewalls from affecting the reading and will provide a solid surface against which you can place the gauge and obtain a precise measurement. Ride height should of course be set with the tires on.

You've fixed it up; now keep it up. If you had to use all the tips mentioned in this article to bring your car or truck up to snuff, you've definitely let your car go too long before a rebuild! You don't have to run through these tune-up procedures after every race, but after every racing weekend, you should check that the suspension moves freely. It's always easier to fix small problems frequently than to perform a major teardown on the night before a race.

*Addresses are listed alphabetically in the Index of Manufacturers on page 209. ■

ADVERTISER INDEX

AAA Hobby Dist., 102
 Acclaim Entertainment, 20-21
 Ace Hardware Hobbies, 155-157
 Ace Hobby Dist., 39
 Acer Racing, 206
 Airtronics, 37
 America's Hobby Ctr., 172-173
 Associated Electrics, 30-31, 67, 111, 130, 139, 159
 B&T Racing Team, 208
 Boca Bearing, 205
 Bolink R/C Cars, 154
 Bruckner Hobbies, 196-199
 Byron Originals, 208
 Calandra Racing Concepts, 205
 California R/C Ctr., 192-195
 Cermak Models, 208
 Compagnucci, 9
 Competition Electronics, 93
 Cross Co. Ltd., 189
 Dalton Raceway, 207
 Deans, 143
 DuraTrax, 33, 149
 ERI Associates, 205
 FMA Direct, 175
 Futaba Corp. of America, 128
 G.T.P. California, 163
 General Silicones, 117
 Genka Trading Corp., 52-53
 GM Racing USA, 100-101
 Hammad Ghuman, 98-99
 Hitec/RCD, 27, 97
 Hobbytown USA, 204
 Hobby Etc., 174
 Hobby Products Intl., 28-29, 84-85
 Hobby Shack, 113, 150-153
 Hobby Tech, 133
 Hobby World, 179
 Horizon Hobby Dist., 19
 Keyence Corp., 61
 Kondo Kagaku Co. Ltd., 77
 Kyosho, 14-17, 35, 142
 L.Collari Innotech, 164

LRP Electronics, 130, 159
 M.D. Planes, 202-203
 M.I.P., 134
 Mach 1 Hobbies, 208
 Model Electronics, 165
 Model Rectifier Corp., 206
 Mugen Seiki Racing Ltd., 131
 Multiplex, 207
 Nagengast Hobbies, 205
 New Era Models, 204
 Nitech Precision Racing Products, 204
 Novak Electronics, 11
 O.S. Engines, 75
 O'Brien Engineering, 165
 OFNA Racing, 45, 46-47, 49, 208
 Omni Models, 180-182
 Parma Intl., 73
 Peak Performance, 65
 Precision Model Dist., 165
 Pro-Line USA, 6-7, C3
 R&D Racing, 183
 Reedy, 111
 Robinson Racing, 42-43
 RPM, 171
 S.E.I. Racing, 158
 Savon Hobbies, 166-169
 Schumacher, 183
 Serpent USA, 146-147
 Sheldon's Hobbies, 190-191
 Stormer Hobbies, 184-185
 Tamiya America, 78-79, 201, C2
 Team Losi, 51, 129
 Team Orion, 59, 119, 141
 Tekin Electronics, 132
 Tire Saver, 204
 Tower Hobbies, 120-125
 Traxxas, 40-41
 Trinity, 3, 4-5, 12-13, 22, 24-25, C4
 Ultimate Hobbies, 170
 XS Speed, 183
 Yokomo USA, 68-69

RADIO CONTROL CAR ACTION (ISSN 0886-1609, USPS 001-087, IPM 1534580) is published monthly by Air Age Inc., 100 East Ridge, Ridgefield, CT 06877-4606, USA. Copyright 1999, all rights reserved. The contents of this publication may not be reproduced in whole or part without the consent of the copyright owner. Periodical postage permit paid at Ridgefield, CT, and additional mailing offices.

SUBSCRIPTIONS. U.S. and Canada, call (800) 877-5169; fax (815) 734-1223, or set your Web browser to <http://www.airage.com/subscribe.html>. U.S., \$34.95 (1 year), \$55.95 (2 years); Canada, \$49.95 (1 year), \$87.95 (2 years). Canadian prices include GST, reg. no. 13075 4872 RT. Elsewhere, call (815) 734-1116; fax (815) 734-1223; \$54.95 (1 year), \$95.95 (2 years). All foreign orders must be prepaid in U.S. funds; Visa, MC and AmEx accepted.

EDITORIAL. Send correspondence to Editors, *Radio Control Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. We welcome all editorial submissions, but assume no responsibility for the loss or damage of unsolicited material. To authors, photographers and people featured in this magazine: all materials published in *Radio Control Car Action* become the exclusive property of Air Age Inc., unless prior arrangement is made in writing with the Publisher.

ADVERTISING. Send advertising materials to Advertising Department, *Radio Control Car Action*, Air Age Inc., 100 East Ridge, Ridgefield, CT 06877-4606 USA; phone (203) 431-9000; fax (203) 431-3000.

CHANGE OF ADDRESS. To make sure you don't miss any issues, send your new address to *Radio Control Car Action*, P.O. Box 427, Mount Morris, IL 61054-9853, six weeks before you move. Please include the address label from a recent issue, or print the information exactly as shown on the label. The Post Office will not forward copies unless you provide extra postage.

POSTMASTER. Please send Form 3579 to *Radio Control Car Action*, P.O. Box 427, Mount Morris, IL 61054.

INDEX OF MANUFACTURERS

Ace Hobby Distributors Inc.
 116W. 19th St., Higginsville, MO
 64037-0472; (660) 584-7121;
 fax (660) 584-7766.

Acer Racing
 P.O. Box 5680, Santa Monica, CA
 90409-5680; (310) 472-8090;
 fax (310) 472-4870; website:
www.acerracing.com.

Aero-Car Technology
 P.O. Box 336, Western Springs, IL
 60558-0336; (708) 246-9027.

Airtronics
 1185 Stanford Ct., Anaheim, CA
 92805; (714) 978-1895;
 fax (714) 978-1895.

Andy's R/C Products
 distributed by Great Planes
 Model Distributors
 (address below).

Associated Electrics
 3585 Cadillac Ave., Costa Mesa,
 CA 92626-1403; (714) 850-9342;
 fax (714) 850-1744;
www.rc10.com;
www.teamassociated.com.

Blue Thunder
 4105 Fieldstone Rd., Champaign,
 IL 61821; Horizon Service center:
 (217) 355-9511.

Bolink R/C Cars Inc.
 420 Hosea Rd., Lawrenceville, GA
 30045; (770) 963-0252;
 fax (770) 963-7334.

Bruckner Hobbies
 3587 East Tremont Ave., New
 York, NY 10465; (718) 863-3434;
 (800) 288-8185;
 fax (718) 863-4002.

DuraTrax
 distributed by Great Planes
 (address below).

Dynomite
 4105 Fieldstone Rd., Champaign,
 IL 61821; (217) 355-9511;
 fax (217) 352-0355;
 website: www.horizonhobby.com.

Futaba Corp. of America
 P.O. Box 19767, Irvine, CA 92723-
 9767; (949) 455-9888;
 fax (949) 455-9899.

GM Racing
 416 Ohio Ave., McDonald, OH
 44437; (330) 530-2330;
 fax (330) 530-2333;
 website: www.gm-racing.de.

Great Planes Model Distributors
 2904 Research Rd., P.O. Box
 9021, Champaign, IL 61826-9021;
 (800) 682-8948;
 fax (217) 398-0008.

Hammad Ghuman Inc.
 6 Tower Heights, Albany, NY
 12211; (518) 782-9255;
 fax (518) 782-9256;
 website: www.ihg.com.

Hitec RCD Inc.
 12115 Paine St., Poway, CA
 92064; (858) 748-6948;
 fax (858) 748-1767;
 website: www.hitecrd.com.

Hobbico
 (see Great Planes Models
 Distributors).

HPI
 15321 Barranca Pky., Irvine, CA
 92618; (949) 753-1099;
 fax (949) 753-1098;
 website: www.hpiracing.com.

JB Weld Co.
 P.O. Box 483, Sulphur Springs,
 TX 75482.

Kimbrough Products
 1322 Bell Ave., Unit 1-C, Tustin,
 CA 92780; (714) 258-7425;
 fax (714) 258-7426.

KO Propo
 4-17-7, Higashi-Nippori, Arakawa-
 Ku, Tokyo, 116-0014, Japan;
 81-3-3807-7751;
 fax 81-3-3807-8155;
 email info@kopropo.co.jp.

**Kyosho/Great Planes
 Model Distributors**
 P.O. Box 9021, Champaign, IL
 61826-9021; (800) 682-8948.

Loctite Corp.
 18731 Cranwood Ct., Cleveland,
 OH 44128; (216) 475-3600;
 customer service
 (800) 338-9000.

Losi
 13848 Magnolia Ave., Chino, CA
 91710; (909) 465-9728;
 fax (909) 590-1496;
 website: www.teamlosi.com.

Novak Electronics Inc.
 18910 Teller Ave., Irvine, CA
 92612; (949) 833-8873;
 fax (949) 833-1631;
 website: www.teamnovak.com.

MIP
 830 W. Golden Grove Way,
 Covina, CA 91722;
 (626) 339-9008;
 fax (626) 966-2901;
 website: www.miponline.com.

MRC (Model Rectifier Corp.)
 80 Newfield Ave., Edison, NJ
 08818-6312; (732) 225-6360;
 fax (732) 225-0091;
 website: www.modelrec.com.

Nuova Faor
 distributed by Ace Hobby
 Distributors
 (address above).

O'Donnell Racing
 10702 Hathaway Dr., # 2, Santa
 Fe Springs, CA 90670;
 (562) 944-9671;
 fax (562) 944-8821.

OFNA Racing
 22692 Granite Way, Ste. B,
 Laguna Hills, CA 92653;
 (949) 586-2910;
 fax (949) 586-8812.

Pactra Inc.
 distributed by Testor Corp., 620
 Buckbee St., Rockford, IL 61104;
 (815) 962-6654;
 fax (815) 962-7401.

Penguin R/C
 1230-P N Jefferson St., Anaheim,
 CA 92807;
 (714) 630-9015;
 fax (714) 630-6250.

Prather Products
 1660 Ravenna Ave., Wilmington,
 CA 90744-1398;
 (310) 835-4764; (310) 835-0810.

Pro-Line/Jaco
 P.O. Box 456, Beaumont, CA
 92223; (909) 849-9781;
 fax (909) 849-2968.

R/C Neon
 (see Varad Corp.).

Robinson Racing Products
 4968 Meadow View Dr.,
 Mariposa, CA 95338; (209) 966-
 2465; fax (209) 966-5937.

RPM Inc.
 14978 Sierra Bonita Ln., Chino,
 CA 91710; (909) 393-0366;
 fax (909) 393-0465.

Sanyo
 2055 Sanyo Ave., San Diego, CA
 92173; (619) 661-6620;
 fax (619) 661-6743.

Tamiya America Inc.
 2 Orion, Aliso Viejo, CA 92656-
 4200; (800) TAMIYA-A;
 fax (949) 362-2250; website:
www.tamiya.com.

Team Losi
 13848 Magnolia Ave., Chino, CA
 91710; (909) 465-9728;
 fax (909) 590-1496;
 website: www.teamlosi.com.

Traxxas Corp.
 12150 Shiloh Rd., #120, Dallas, TX
 75228; (972) 613-3300;
 fax (972) 613-3599;
 website: www.traxxas.com.

Trinity Products Inc.
 36 Meridian Rd., Edison, NJ
 08820; (732) 635-1600;
 fax (732) 635-1640;
 website: www.teamtrinity.com.

TS Racing
 124 E. 31 St., Long Beach, CA
 90807; (562) 997-0375.

Varad Corp.
 17902 Star of India Ln., Carson,
 CA 90746; (310) 353-2612;
 (310) 768-3220.

Yokomo USA
 Airport Business Center, 17951
 Skypark Cir., Ste. K, Irvine, CA
 92614; (949) 252-8663;
 fax (949) 252-8657;
 website: www.yokomousa.com.

Chris's BACK LOT

The opinions expressed on this page do not necessarily represent the opinions of the entire Car Action staff. Any resemblance to reality is purely coincidental. Send your correspondence, hate mail, love letters, photographs—anything you like—to Chris's Back Lot, c/o R/C Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. My email address is: chris@airage.com.

BY CHRIS CHIANELLI

Auto Art

Ya know, you guys really are the best to expose your creative side to me; you trust me! And I do love your work. Not because I think it will end up hanging in the Guggenheim, but because it tells me a little about who you are as people. Now, you know I can't help myself when it comes to being a wise guy, so remember: I picked these because I really do like them—truly. And so does Luna. To prove it, you all get a free, one-year subscription to R/C Car Action.



FAREON, you don't like to hurt anyone's feelings; you're very much a diplomat. You like to support as many manufacturers as you can.

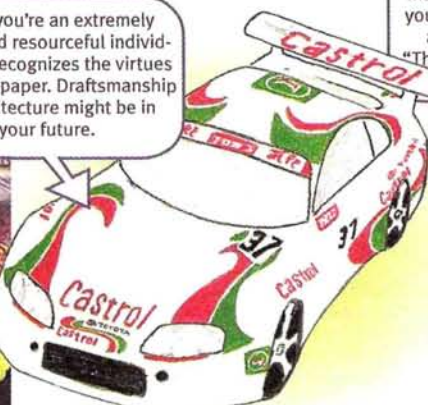
FAREON HICKMAN
Jennings, LA

CLAYTON, you have the insight to be a marketing consultant for the auto industry. You obviously recognize the need for an easier-to-park, shorter, narrower Hummer.



CLAYTON LONG
Houston, TX

TONY, you're an extremely clever and resourceful individual who recognizes the virtues of tracing paper. Draftsmanship or architecture might be in your future.



DANG (TONY) YANG
Metuchen, NJ

STEVEN, not only are you a man with classy taste, but you also understand—and abide by—the axiom, "There are no straight lines in fine art."



STEVEN TERRELL
Mechanicsville, MD

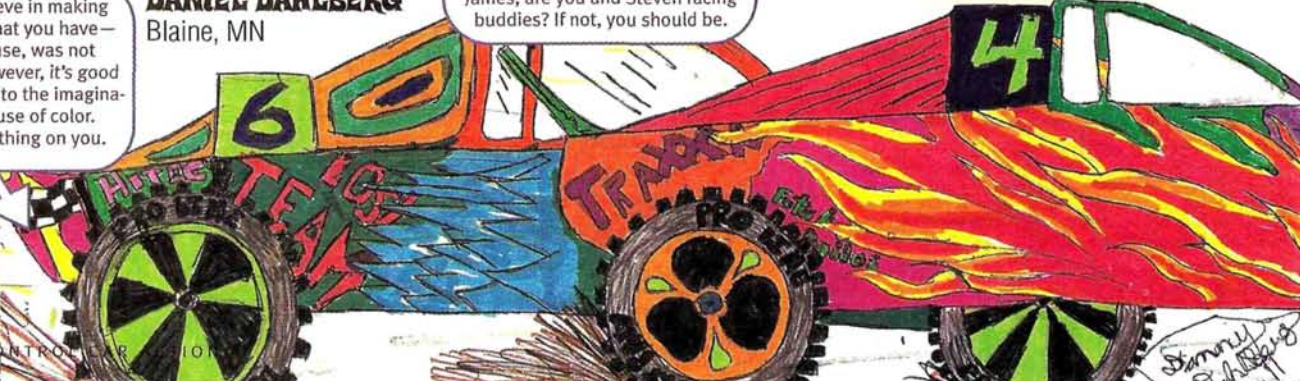
JAMES, you're of the "eclectic/purist" school of art; you draw upon many sources—in this case, the combined worlds of nostalgia, mud-bus racing, hot-rods and winged pickup things. Hey James, are you and Steven racing buddies? If not, you should be.



JAMES UNKLE
Mechanicsville, MD

DANIEL, you believe in making the most out of what you have—which, in this case, was not enough paper. However, it's good to leave something to the imagination. Love your use of color. Van Gogh had nothing on you.

DANIEL DAHLBERG
Blaine, MN



NICK JENSEN West Valley City, UT

CHANH, you're an iconoclast. A Losi truck with a Beetle nose; I love it! You play by your own rules—an essential quality for artistic success.



CHANH TRINH
San Diego, CA

TYLER, you've got that impressionistic style nailed. Keep up the good work.



TYLER HAINES
Pickerington, OH

Chris's Back Lot
c/o R/C Car Action
100 East Ridge
Ridgefield, CT 06877